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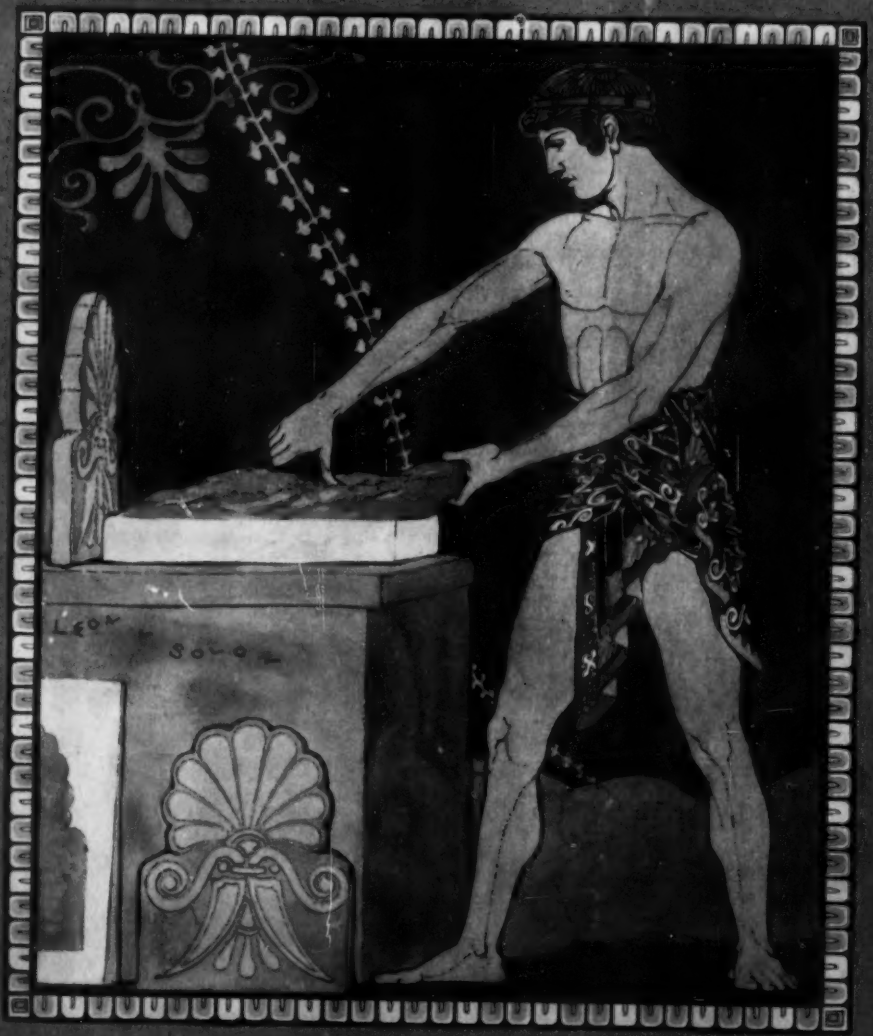
THE ARCHITECTVRAL RECORD

APRIL 1919



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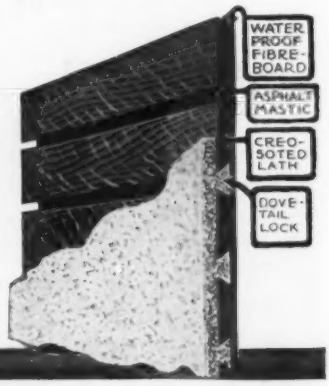

THE ARCHITECTVRAL RECORD

CONTENTS

Vol. XLV. No. 4 APRIL, 1919 Serial No. 247

Editor: MICHAEL A. MIKKELSEN *Contributing Editor:* HERBERT CROLY
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COVER—A Greek Potter Making Architectural Faience. Water Color PAGE
By Leon V. Solon

THE SUMMER HOME OF GEORGE C. NIMMONS, at Flossmoor, Illinois . 290

A POTTER AND HIS WORK—Leon V. Solon 303
By H. Van Buren Magonigle

AMERICAN COMBAT AIRDROMES 311
By Charles G. Loring

A POST-WAR CONSTRUCTION PROGRAM. The Building Bureau of the International Committee of the Y. M. C. A. Part II . . 325
By Charles C. May

MODERN INDUSTRIAL PLANTS. Part VI-a 343
By George C. Nimmons

THE OFFICE BUILDING OF GASTON, WILLIAMS & WIGMORE, ON LOWER BROADWAY, NEW YORK CITY. Alfred C. Bossom, Architect 356

THE ARCHITECT'S LIBRARY. The Aesthetics of Engineering. "Bibliographical Notes" 366
By Frank Weitenkampf

PORTFOLIO OF CURRENT ARCHITECTURE 370

NOTES AND COMMENTS 380

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A GARDEN WALK—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

The SUMMER HOME of GEORGE C. NIMMONS

—at Flossmoor, Illinois —

GOLF and gardening as a means for recreation and amusement have probably been the cause in recent years of the building of more summer homes in the country or suburbs than any other agency. The grounds of the golf club usually form the center of a community around which the members of a club build their homes. Often the land surrounding the golf course, upon which these homes are built, is uninteresting and devoid of trees or natural attractions; but the golf course itself in order to be suitable for golf is sure to possess sufficient diversity and landscape features to make a fine foreground for residences, with many beautiful and attractive long-distance views. In fact, a modern golf course, with its great open fair-ways, its velvet-like putting greens, its woods, sand traps, bunkers, hills and water-ways, often forms a landscape of great charm, particularly in the morning and evening, when the shadows are intensified by the smoothness and light color of the well-kept grass upon which they fall.

Being assured of such a prospect in front of their houses, the members are usually quite content to build upon the surrounding land, even though it be bare, and create anew whatever setting for their homes and landscape effects in their grounds that they may desire.

There are certain advantages to be gained in such instances to compensate for the lack of full-grown trees or other features of the more fortunate building sites, as there is nothing in this way to limit or interfere with the adoption of whatever treatment of the grounds is desired, and the trees and other features of the landscape can be placed exactly in the positions, in reference to the house and different parts of the grounds, where they will be most effective. The greatest compensation for the lack of natural landscape features around the house at first is, of course, the golf grounds; but if quick-growing trees are transplanted, the owner does not need to wait long before the effects from such a treatment become interesting and attractive. In the meantime he has the beautiful views over the golf course to interest him while he is waiting for the effects of his own grounds to develop.

An example of a summer home overlooking a golf course built under such conditions forms the subject of this article. It was built upon a site 300 x 420 feet, with streets on three sides. The ground was originally a corn field without a tree on it and all of the growth of trees and shrubbery shown has been attained since the house was built about ten years ago. The trees selected for transplanting were only of a fair size, but of the quick-growing varieties, mostly soft maples and Carolina poplars, which, contrary to the predictions of the nurseries, have proven very satisfactory, have been free from scale or other tree diseases and have not lost their branches or been broken to any objectionable extent by the high winds which came with storms during this time. These trees were all planted in the positions which screened off the least interesting views and opened up those of most attraction from the desirable viewpoints of the house. As the house fronts the golf course of over 200 acres of beautiful landscape, the planting of the trees around the house was, therefore, contrived so as to secure views of the most attractive parts of these grounds. The

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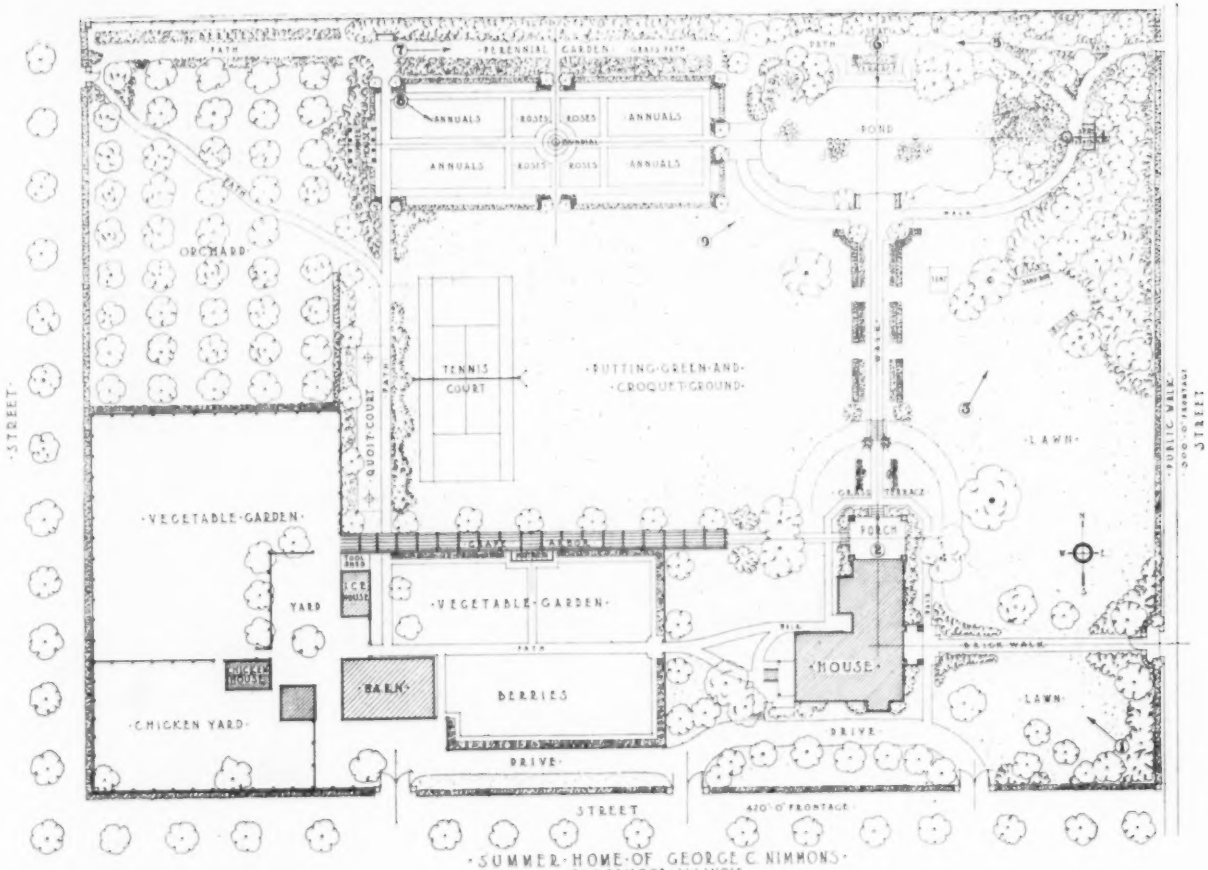


SUMMER HOME OF GEORGE C. NIMMONS
FLOSSMOOR, ILLINOIS
GEORGE C. NIMMONS, ARCHITECT

SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

FROM THE END OF THE GARDEN—SUMMER HOME
OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

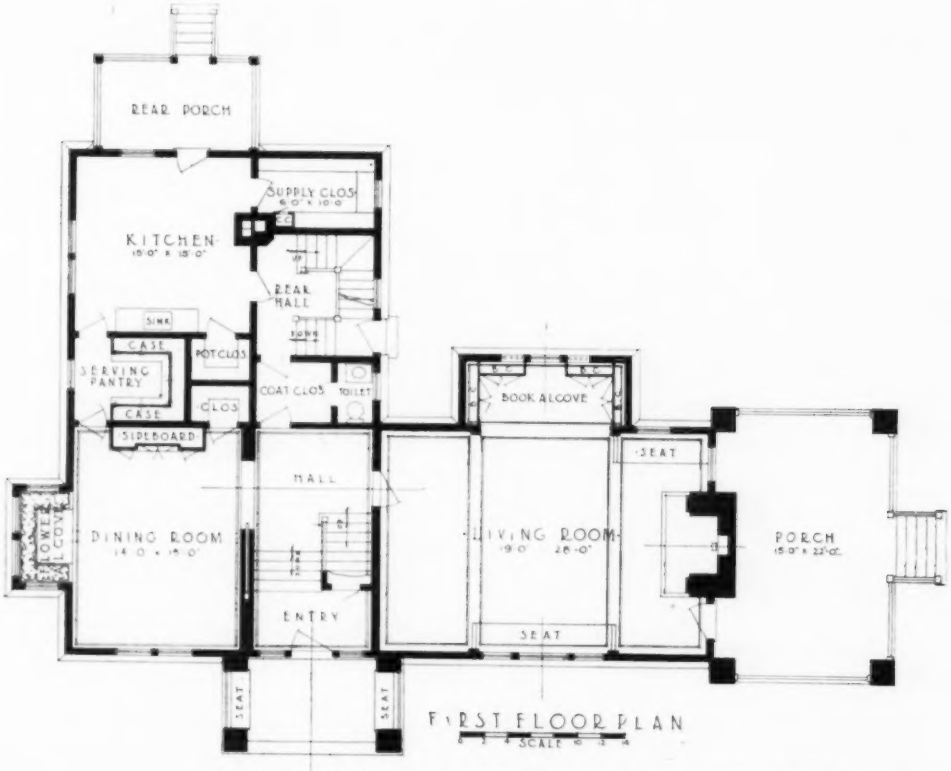
POOL AND FOUNTAIN IN THE GARDEN—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

GARDEN—THE SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

VIEW ACROSS THE LAKE—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

FLOWER GARDEN AND WALK—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

GARDEN—THE SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.



•RESIDENCE OF GEORGE C. NIMMONS • ARCHITECT•
•AT FLOSSMOOR • ILLS•

PLAN OF FIRST FLOOR—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

PLAN OF SECOND FLOOR—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

locating of the other trees and planting of the grounds were determined by the design of the landscape features of the place illustrated by the plan.

The features of the grounds which were given the most importance in designing the landscape effects were the paths and walks, the lily pond—which is about 40 x 100 feet in size, with its fountain and cascade—flower gardens, vegetable gardens, a berry garden, an old-fashioned round-topped grape arbor and a playground, with space for a putting green, croquet and tennis court.

An unusual length of paths and walks for a place of this size was secured by the design of the grounds shown on the plan, as their total length is about 1,500 lineal feet. The main walk from the principal veranda on the north side of the house extends directly to the pond, where two paths branch off that lead to the flower gardens and the fountain located in the clearing in the dense planting in the corner of the grounds. The path to the right leads up a little hill, on the top of which is the fountain and a stone seat under a tree, which gives a view down the cascade flowing into the pond, and on over the pond into the annual flower garden terminated by the summer house shown in this view. The clearing at the fountain opens into a grass path that runs back of the pond, where the house is mirrored as shown in one of the illustrations, and then the path leads on through the perennial flower garden into the orchard. There are branches from this path along the way that open into the annual garden, surrounded by a mulberry hedge, near which are wild cherry trees that attract the birds. From the orchard the path re-

ENCLOSED BEDROOM PORCH—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

THE DINING ROOM—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

turns toward the barn, the vegetable gardens and the round-topped grape arbor, that forms a refreshing green tunnel through which to return to the veranda from where one started.

The plans of the house show an entrance hall in the first story between the living room and dining room, placed low enough to allow for a mezzanine porch off the landing of the stairs, which affords at this point a very commanding view of the golf grounds. As the house was only to be occupied in summer, the principal veranda was placed on the north side of the house instead of on the south, as is usually the case, so as to secure the shade that is nearly always desirable in this season of the year. The owner's bedroom suite is over the living room below and has its closets and bathroom arranged on each side of a private hall leading up to the bedroom. Beyond this is an inclosed porch with very good views over the grounds. The other bedroom in this story fronts south; and the servants' quarters are in the third story. In the basement is a very complete carpenter's shop, which has been used by the owner in making some of the furniture for the house.

THE PLAYGROUND—SUMMER HOME OF GEORGE C. NIMMONS AT FLOSSMOOR, ILLINOIS.

FAIENCE FRIEZE, BY LEON V. SOLON.

A POTTER AND HIS WORK — LEON V. SOLON —

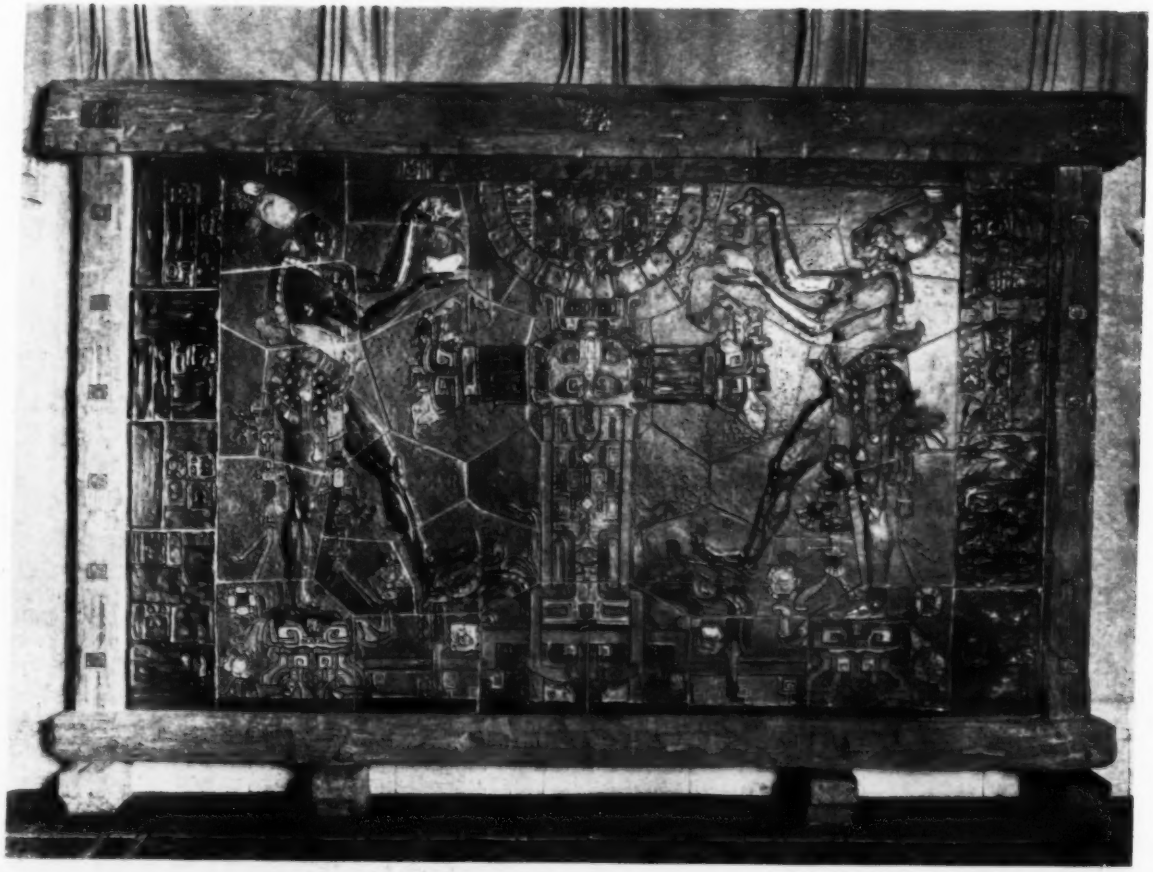
BY H. VAN BUREN MAGONIGLE.

TO measure the comparative forces of heredity and training is a fascinating study; an awful fascination lies in its danger; human nature has such a way of breaking the web of the finest spun theories. But sometimes by a happy concurrence both training and heredity join forces to produce an artist like Solon, a potter, a maker of lovely pattern, equally skilful in the evocation of delicate fantasies or of virile works in clay.

It has become almost the exception in this country for a boy to follow his father's calling; it is much more usual abroad, although a background of three hundred years of family tradition and achievement in a craft, such as Solon's, is not common anywhere. His father was Louis Marc Solon, one of the most celebrated of modern potters. As a student at the Ecole des Beaux Arts he was one of that brilliant group of which Fantin La Tour, P. V. Galland, Legros, Regnaud, Bracquemond and Jacquemart were members, and who always maintained the old cordial relations of their student days. The very mention of the names evokes the Paris of the third Napoleon—not quite the one Du Maurier so loved, but a most beguiling Paris nevertheless. Solon grandpère was Chief Justice of Egypt under Napoleon III, and was later recalled and the revision of the Code Napoleon placed in his hands.

Louis Marc on leaving the Ecole des Beaux Arts became a designer in the Sevres factory, where he originated the *pâte-sûr-pâte* ware. In 1870 he and Galland went to England together, where Solon established a connection with the great Minturn works and made *pâte-sûr-pâte* famous. Minturn's is at Stoke-on-Trent, one of the "five towns" which made Arnold Bennett's reputation: Burslem, Tunstall, Hanley, Stoke-on-Trent,

SKETCH BY LEON V. SOLON.



FAIENCE PANEL, "THE SUN-GOD," BY LEON V. SOLON.

ORTHOCHROMATIC REPRODUCTION OF WATER COLOR STUDY BY LEON V. SOLON.

Longton; there, day and night, the smoke of the kilns of the greatest pottery centre of the world goes up to heaven—and it was in this atmosphere Leon V. first drew breath. The managing director of Minturn's was Leon Arnoux, one of a long line of French potters; for three hundred years his family has made the Moustiers, Moulins, Apt and Toulouse faiences, known to connoisseurs the world over. Louis Marc Solon married Miss Arnoux. After their first son had passed through the hands of private tutors he was sent to the Hanley School of Art, won one of the ten National Scholarships given yearly for the British Possessions, and in the same year became Royal Exhibitioner—another scholarship. Two scholarships at once would never do, so they took one away and the youthful prodigy went up to London to the South Kensington Schools for three years, and with sundry medals returned to Stoke-on-Trent and the Minturns. In two years, upon the retirement of his grandfather Arnoux, he became Art Director of the company, and filled that important post for ten years. During this period he exhibited paintings in oil and water color, and decorations in faience, at the Salon, the Royal Academy and International Exhibitions. Upon the amalgamation of the Decorative Art Departments of the University and of the City of Liverpool he was called upon to reorganize these schools on the basis of craftsmanship directly applied to design, and inaugurated there a novel and very successful method of teaching design. After two years he came to the United States, where for four years he painted portraits and mural decorations, illustrations and that

ONE OF A SERIES OF FAN DESIGNS BY LEON V. SOLON.

sort of thing, acting ad interim in an advisory capacity in relation to the American market to various English ceramic houses. He then became the Art Director of one of the largest companies here, where he is engaged in developing the decorative possibilities of faience.

This is the bare record. It takes account of the formal training of the youth and the practice of the man—it does not reveal the early, partly unconscious, training the boy received from his father, the most valuable of all. It only hints of the myriad impressions of a childhood passed among the descendants of potters for generations. Solon père possessed the greatest library on ceramics in the world; at his death it was purchased by Andrew Carnegie and presented to the Ceramic Technical Institute of North Staffordshire, and has been but recently opened as the Solon Library. When Leon was a boy he spent evenings and Sundays without end, every spare moment, under his father's sympathetic guidance, poring over the books, particularly those on Greek vases. He drew Greek vases and the decorations on them and then drew them again and again, and his father made him draw them right. The fruit of this boyish work is manifest in almost everything that comes from the hand of the man. The influence of Greece is like the pure sweet sound of a silver bell heard through the roar and clangor of a busy street; in art it manifests itself in a certain rhythm, a gracious balance, a disposition of light and shade unmistakable, quite indescribable; it never descends to the merely pretty—a strong masculine note runs through it. One has but to look over Solon's drawings to see how these qualities interpenetrate his work; I can find no single figure, no single motif upon which one may lay an accusing finger and say, "That is cribbed"; they do not suggest an accusation—but what is in them seems familiar and you realize that it is the spirit in them, the character of them that has affected you—that they are sympathetic interpretations of a thousand sources, not literal transcriptions of any one.

There is no leaven like it, the Greek influence; it gives restraint, the sense of power in reserve. Some phrasemaker once spoke of "the cold perfection of the Greek"—a cheerful and complacent idiot who was merely incapable of apprehending anything Greek soever; the warmth and the color were not for him, the vibrant subtleties of modulation escaped him. In restoring to us a sense of Greek color-mass as distinguished from Greek line, and yet without losing line, Solon is to be thanked. I possess a sketch of his—a portion of a faience frieze in which two

SKETCH BY LEON V. SOLON.

SKETCH BY LEON V. SOLON.

early Greek maidens figure on a rich blue ground, on which masks are hung at balanced intervals and whose vertical lines stabilize the action of the dancers—two black-haired maidens out of the joyous childhood of Greece, in whom nevertheless, if one has the key, one may trace a certain Caledonian character — Greece and Scotland united by the vision of a potter of Gallic ancestry. In this study one realizes what design in the Greek spirit may mean in the hands of one who has made that spirit his own; we catch a glimpse of the splendor of Greek color —we who are too prone to think of Greece in terms of cold white marble, and who thus yet suffer from the tradition for which the frigid inanities of Canova, Thorwaldsen and Hiram Powers are responsible—we who forget that the architecture of the Greeks was above all a polychrome architecture, their glyptic art a polychrome art. The amount of polychrome terra cotta used throughout Greece was enormous. With their cool practical sense, the Greeks, when they could not afford Pentelican marble enriched with pigment, took colored terra cotta as an acceptable substitute, and did not attempt to make it look like colored marble. Their taste saved them in this as in other things.

But if I interpret aright what Solon is trying to do, it is not to reproduce Greek forms in faience but rather to seek out and apply the principles upon which the Greeks worked with color—how the application of color was foreseen and provided for in the modeling of the form at the very outset. Most architects when they would use polychrome and relief in conjunction hark back to the tradition of the later Robbias, a quasi-naturalistic coloration of ornamental forms, the forms themselves modeled without reference to the reception of color. In dealing with principles the designer is free to apply them to design in the general character of any period and produce something quite new. The idea of the *cloison* applied to polychrome ornament with an Italian Renaissance parentage is provocative and inspiring.

I have selected some of Solon's designs for reproduction principally to show his range—from the dainty decoration of a fan to the solid qualities of "The Sun God"—and also to show his growth. It is interesting to compare in this respect the series of cover designs for the Archichitectural Record now appearing, with some of the earlier things. But these are only drawings. Solon is a potter, first, last and all the time. He makes one believe in the Biblical myth of man's origin, so much does clay seem a part of

him. And it is in his work in clay that one finds the native expression of the man. His palette is both bold and delicate. He uses red glazes that are like a cry of joy, resonant blues, deep browns and luscious yellows—and black. By the use of black one knows the colorist. Solon knows how to use it. In design, his work in tile and faience shows an amazing adaptability, flexibility. He is as much at home in Chinese as in the most modern and ingenious use of the simple shapes and sizes of ordinary tile, which fall into place under his fingers in new and interesting relations.

We may felicitate ourselves upon the transplantation to America of a talent like this, the exemplar of a training so long and sound, of the tradition of design and craftsmanship as inseparable we so deplorably lack here and which we must cultivate and foster.

DESIGN FOR GREETING CARD, BY LEON V. SOLON.

Plate A.
HEADQUARTERS BUILDING, SHOWING CAMOUFLAGE OF PAINT ON THE SIDES AND BRUSH ON THE ROOF.

AMERICAN COMBAT — AIRDROMES —

BY CHARLES C. LORING.

THE American-built airdome on the Western Front was different from the flying fields here, owing to the danger from bombing and to the character of the building material available. There were various types more or less specialized and placed at well defined distances from the trenches—such as the "Pursuit" and the "Observation," the "Day" and the "Night Bombing,"—but their main features were similar.

The plans and photographs here reproduced show the characteristic irregular grouping, distressing to the efficiency engineer but rendering the plants much less vulnerable as targets. As one officer proudly boasted, "No two hangars are on the same straight line."

The typical A. E. F. combat airdrome covered two hundred and fifty acres. The flying fields themselves were at least five hundred yards in diameter, usually longer in one dimension and preferably rising slightly at the center so that the planes could take off down hill and against the wind, no matter from what direction it was blowing. The field had to be free from all pits or hummocks so that when a pilot landed at forty miles an hour he could call it the end of a perfect day and not a $15,000 crash. Also if the turf was thin all pebbles had to be removed and the surface heavily rolled. This was done to keep the propellers, when they were tuning up preparatory to flight, from sucking in bits of stone which might injure the fibre and cause the laminated blades to tear themselves to pieces in the air.

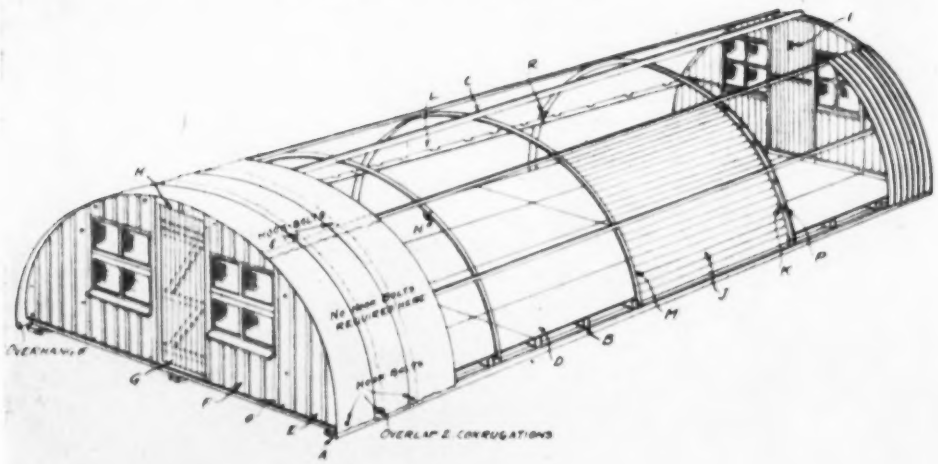
The French countryside is composed

Plate B. Typical airdrome in open country and one of the first of the American built and occupied. This vertical bird's-eye view shows the exact plan, with the hangars grouped at one end of the flying field and the living quarters at the other, but it does not indicate that the field was at the top of a steep knoll, as shown in plate D. The stripes around the airdrome are the charactertistic narrow farms of the French countryside. An observation plane is in the center of the flying field, and three others are near the central hangar. The longer barracks beside the road at the bottom of the plate are large enough to house one hundred enlisted men.

Plate C. Diagonal view of airdrome, shown in plate B. The Meuse River is flowing past the little village on the right of the picture, and the wooded hillsides in the background reach up to the St. Mihiel salient.

Plate D. View showing the Nissen huts and demountable wood barracks in the lower part of plate B. This photograph also shows the slope of the hill at the top of which the flying field was located. Note plate on next page showing detail of Nissen hut.

·NISSEN·BOW·HUT·



	WOODWORK	No Req'd		IRONWORK	No Req'd
A	BOTTOM BEARERS (IN HALVES)	3	M	RIBS (IN 3 SECTORS)	5
B	FLOOR JOISTS (· ·)	13	N	NUTS & BOLTS FOR RIBS	10
C	PURLINS FOR BOWS (· ·)	5	O	HOOK BOLTS, NUTS & WASHERS FOR PURLINS	25
D	FLOOR PANELS 3'0"×4'0"	12		ENDS	50
E	END PANELS RIGHT & LEFT	4		CORRUGATED IRON	75
F	WINDOW PANELS " "	4		BEARER JOINTS	3
G	DOOR	1		FEET OF RIBS	10
H	END PANEL OVER DOOR	1		SPARE	7
I	END PANEL WITH HOLE FOR PIPE	1		WIRE NAILS 3"	2lbs
J	MATCHBOARD LINING AMOUNT 6½ SQUARES	6½		WASHER PLATES	25
	SUPPLIED IN 8-100 BUNDLES	800	P	SHEET IRON CLIPS FOR LINING STRIPS	90
K	LINING STRIPS	48		SPARE	5
L	SHELF & RIFLE RACK (IN HALVES)	2	Q	CORRUGATED IRON SHEETS 3'0"×8'3"	48
				WIRE NAILS 5"	5lbs
			R	BRACKETS FOR SHELVES	6

Plate E. Isometric drawing of Nissen bow hut, built of corrugated steel. See plate D on preceding page.

Plate F. Bessoneau hangars shown in plate B. In the right hand shelter may be seen the tail of a plane. The camouflage covering is stretched down over the side supports so as to eliminate tell-tale shadows. See plate G for detail of Bessoneau hangar.

of scattered villages with few individual farmhouses, the land between being subdivided into small narrow fields. In a typical airdrome there may be six hundred ribbon-like parcels of land with perhaps seventy-five individual owners. Nor does this include the Communal woods, the perennial source of fuel for the natives.

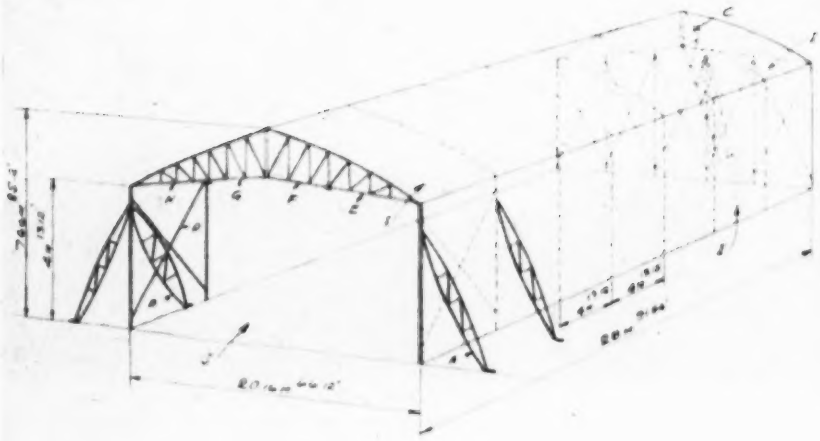
These fields are separated from each other by shallow ditches and are graded up in the middle, and the whole surface has to be plowed, cross-harrowed, rolled and seeded. Sometimes, however, an old maneuver ground or stretch of communal grazing land was available for an airdrome and its comparatively level surface greatly reduced the labor and insured a heavier turf.

Normally, an airdrome was designed for one group of three or four squadrons, and according to type this called for twelve to twenty of the larger hangars. These shelters for the planes were generally the Bessoneau or similar model, measuring approximately 70 x 100 feet. The framework of light wooden trusses with metal knuckles and fish plates supported a canvas cover, and over this was stretched the camouflage screen of painted sacking. The wooden trusses were assembled on the ground, raised into place by means of a long gin pole, and the whole structure anchored to the ground by wire ropes, care being taken that the opening did not face the prevailing direction of the storms. Small tent hangars, for individual machines, were also used on temporary fields or very near the front, within sight of the Germans.

The steel hangars fabricated in America were erected at the depots and at the airdromes which were of a more permanent character. These were of two types, the 100 x 65 ft. and the 100 x 110 ft. clear spans. Riveting was impracticable and wedging was most unsatisfactory, so the members were assembled by bolting. The foundations were either concrete bases or wooden grilles and the sides and roof were of corrugated iron. This model was in great demand in anticipation of its more weatherproof qualities and the possibility of using artificial heat during the winter.

General orders cover the exact number of square feet allowed both the officers and the enlisted men for their sleeping quarters and their mess halls. "Demountable" wooden barracks and huts were used, of Swiss or French make, the first usually six by thirty meters, the latter five by eight. The Nissen hut, made

·BESSONNEAU·HANGAR·



A	BRACES	4B3
B	BRACES	4B2
C	BACK BRACE	4B1
D	DIAGONALS	D1
E	TRUSS	T1L
F		T4L
G		T4R
H		T1R
I	ROOF, SIDES & REAR END COVERED WITH CANVAS	
J	FRONT END COVERED WITH CANVAS, DRAW CURTAIN	

Plate G. Plan and dimensions of typical wood-trussed Bessoneau hangar used by American and French aviators. See plate F for appearance when covered and camouflaged.

Plate H. "The International Field." Vertical view of airdrome next heavy strip of timber. The faint wavy line, running approximately parallel to the edge of the woods, is a stone highway built for the camp. Some thirty odd barracks are concealed among the trees as a protection from observation and also from shell splinters. Four single and one double hangar have been erected. This field was prepared by the A. E. F., and loaned to a British night bombing squadron which had been bombed out of its own station. Three Handley-Page planes are shown near the hangars. These planes have a stretch of fully 100 feet across the wings. This same squadron made trips to Cologne and other points in the Rhine Valley. After the British had left, the field was occupied by American squadrons, and just before the armistice, was turned over to the French, who were preparing a drive on the east of this region, in exchange for a French field farther north where the American second army was to advance. The flying field extends beyond the upper left corner of the plate.

Plate I. A diagonal view of "The International Field" shown above, with a little French village shown in the valley beyond. The fine lines on the flying field itself show where the harrows were dragged across the French parcels of land after they had been levelled by plowing.

Plate J. View of Air Depot with a flying field in the distance, a branch railroad line leading up to the woods in the foreground and the quarters for the personnel between the two. The road connecting with the main highway in the center is in process of being covered with cinders in order to disguise it at night. One white patch with an auto truck shows the appearance of the road without its camouflage covering.

Plate K. Vertical view of a part of the Depot. The compact French village to the right is typical of the one-road settlement of this region. The railroad yard is shown at the bottom of the plate.

Plate L. Automobile park at depot shown in the gap in the woods at left of plate J.

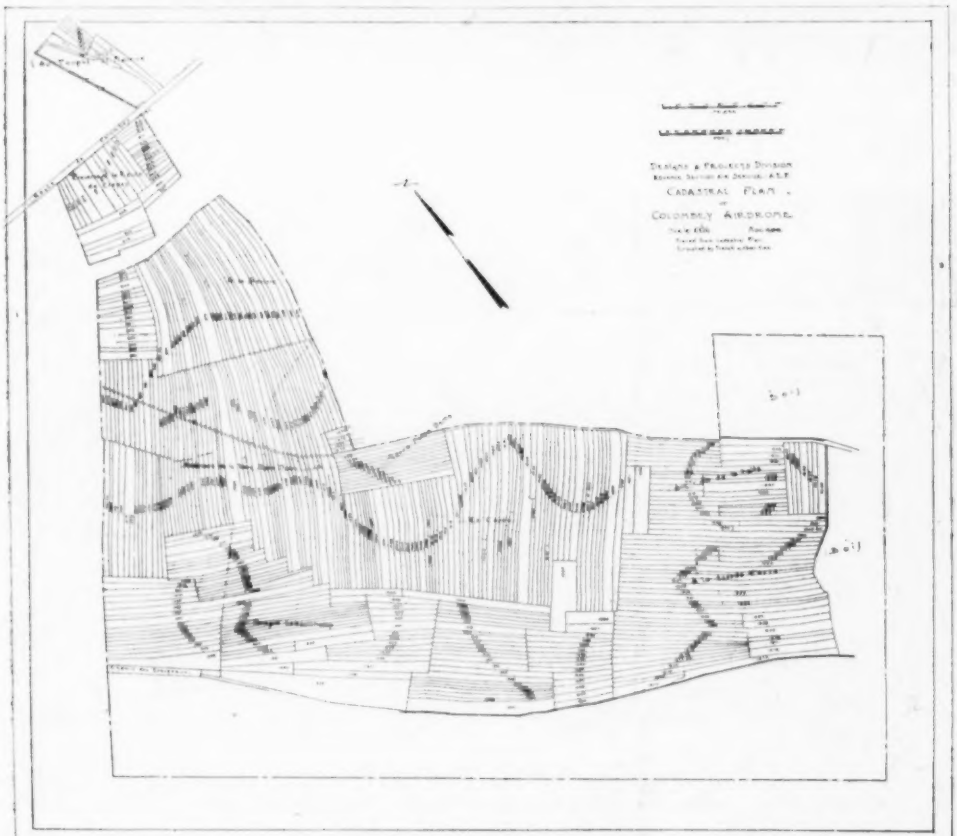


Plate M. Reproduction of Cadastral plan, showing subdivisions of the numerous separately owned fields on one medium sized airdrome. To the right of the field is shown (in blank) the communal woods in which the barracks and hangars were located.

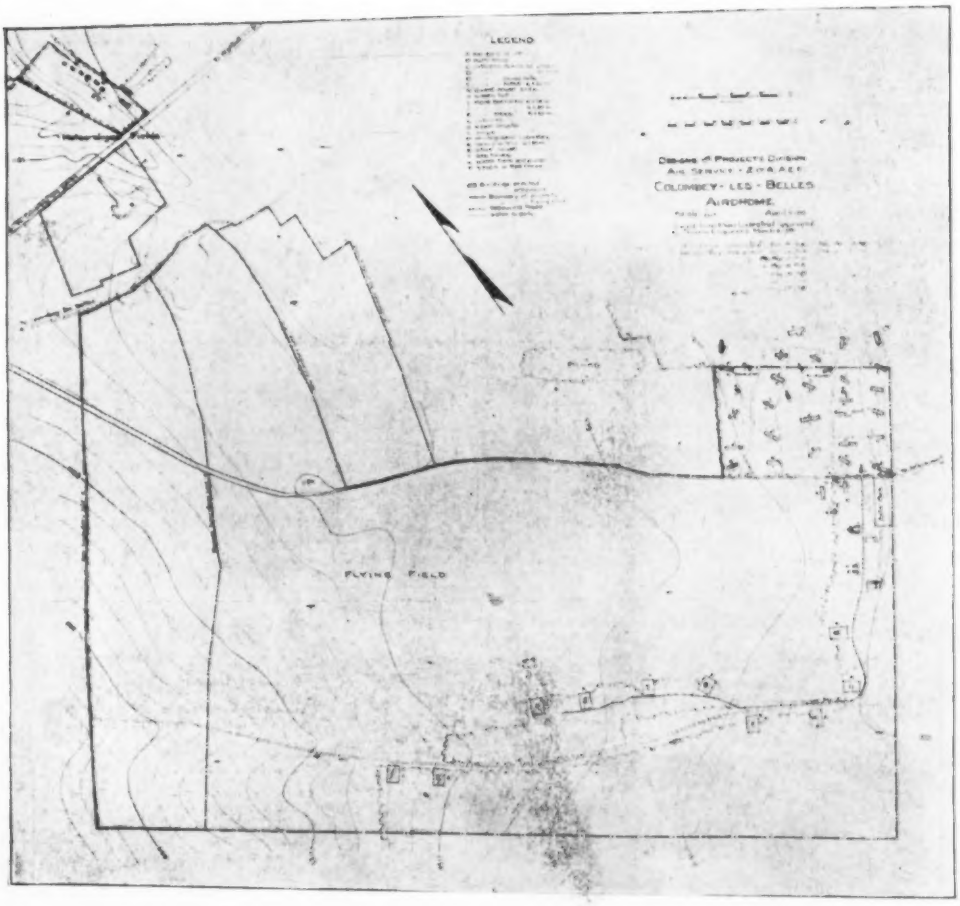


Plate N. Plan showing airdrome on the other side of the town shown in plate K. Plate M shows the Cadastral plan drawing. The meteorological observation station is shown in the upper left hand corner. The barrack shown in plate S is one of the group on the right hand side of the plan above.

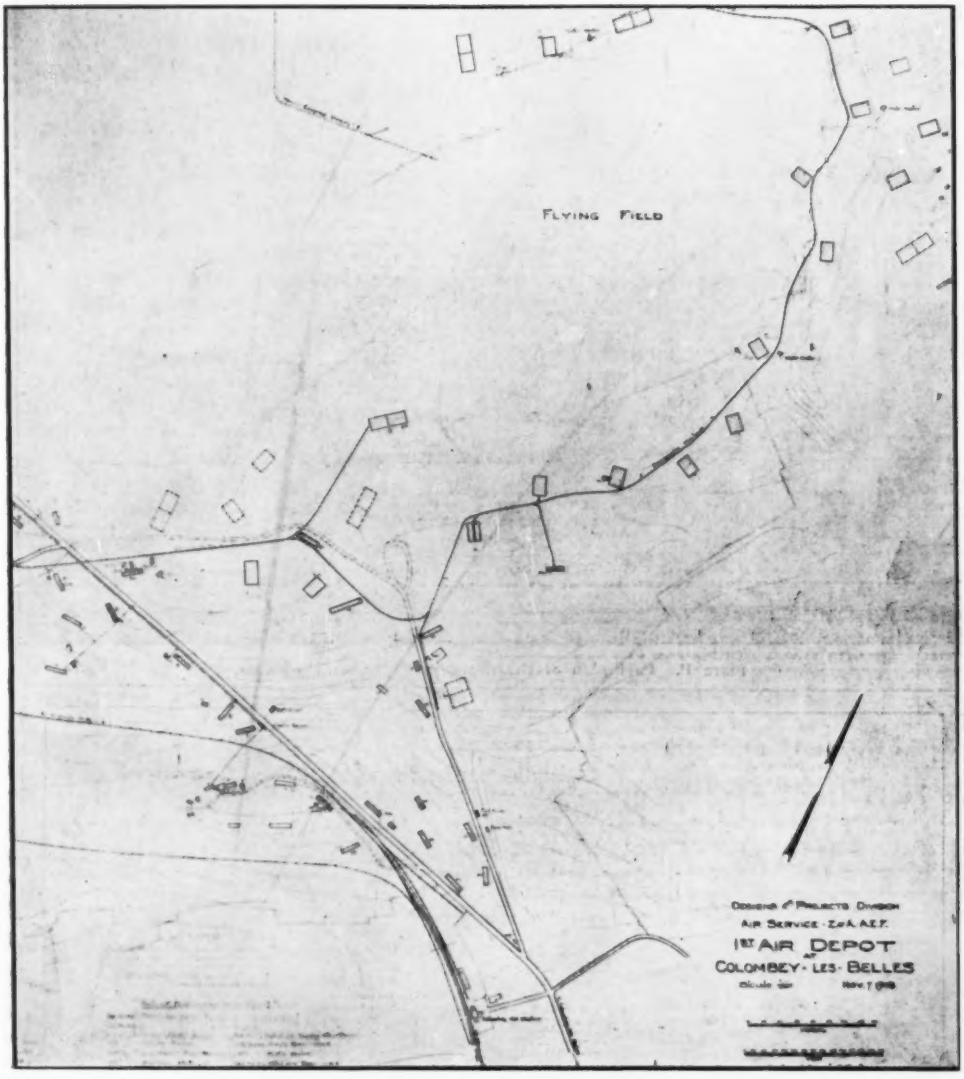


Plate O. Part of the 1st Air Depot showing flying field and railroad yard. Plate P shows the plan continued to the right at Colombey-les-Belles. Plate K shows photograph of this layout.

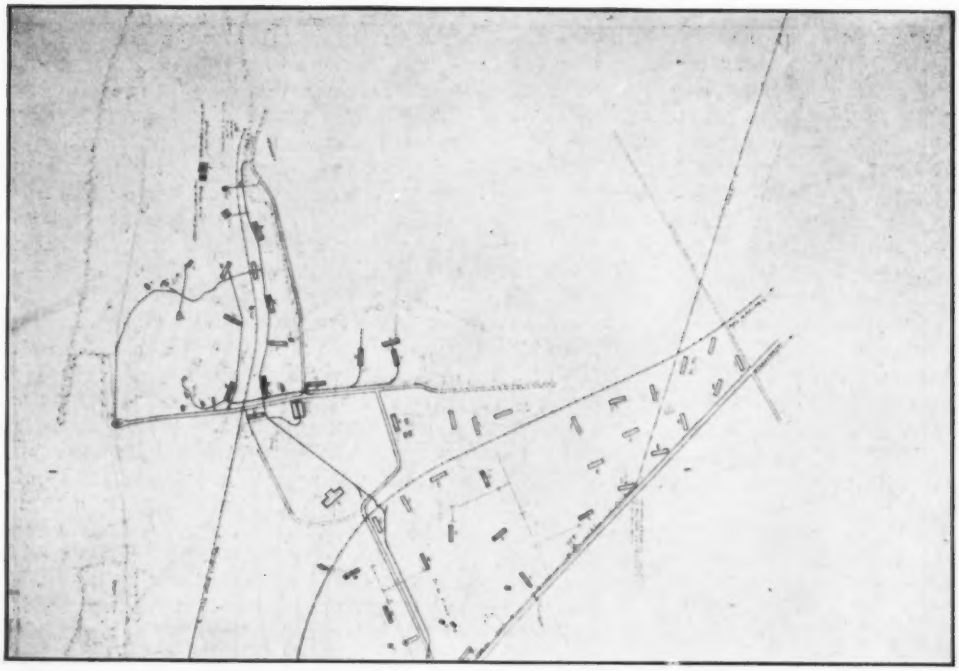


Plate P. Part plan of the depot at Colombey-les-Belles.

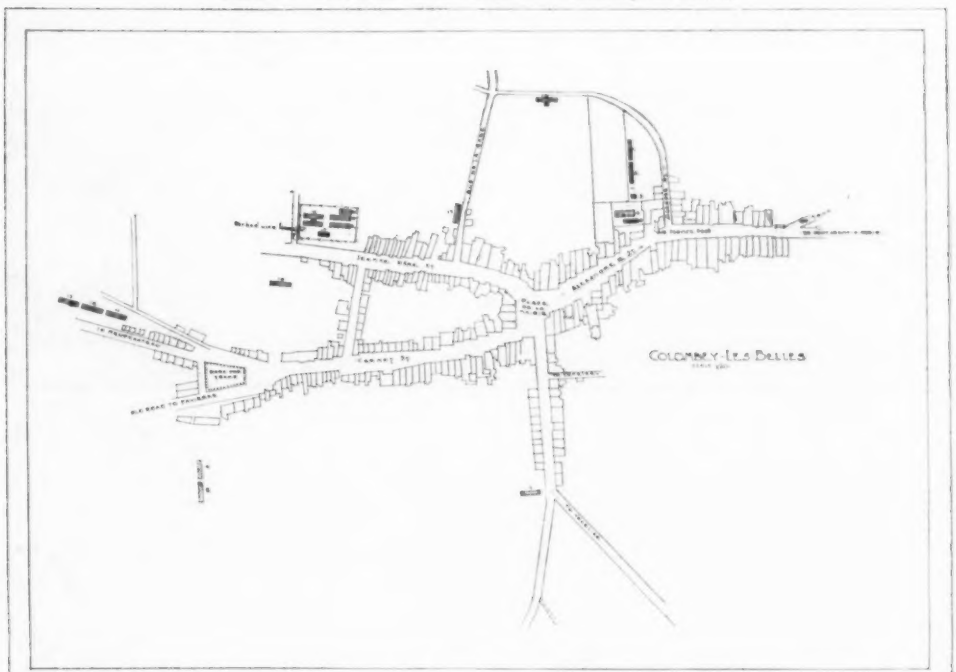


Plate Q. Plan of the village of Colombey-les-Belles, lying between the depot and airdrome of Colombey. The German prison camp, air service headquarters and barracks for casual troops are shown hatched in. Part of the village is shown in plate K.

Plate R. Typical airdrome in wooded country. This shows the largest of the American-built airdromes. Practically all the buildings and hangars are located in the woods. The airplanes are clearly shown on the edge of the field. The edge of a French village is shown on the left of the picture.

Plate S. Barracks in thin woods.

of semicircular sections of corrugated iron, was commonly used for the squadron office, the guardhouse, field stores and the like, while a larger special form with monitor-skylights was adopted for hospitals.

A large barracks capable of housing one hundred men could be erected one day and the brush camouflage on the roof and paint on the sides completed the next. The officers' buildings, headquarters and hospitals were floored; the others left with a packed dirt surface.

If there were available woods, the hangars were embedded along the edge to disguise their location and to gain the protection of the natural splinter screen. The quarters for the personnel were placed at some distance from the hangars for safety, and were also hidden in the timber whenever possible.

The ideal airdrome was located near a highway to reduce to a minimum the building of new roads in the much advertised mud of France. The stones collected from the flying field were used for surfacing; but larger blocks were quarried from the soft limestone strata below the soil, to form a roadbed which in the rainy season would stand up under the heavy trucking of the water-tanks, gasoline convoys and general service. The quarried excavations were used as shelter pits.

Some of the features required in a complete plant were intercommunicating telephones with connections to the French and American trunk lines; bathhouses with showers for the officers and men; automobile parks and repair shops; bomb-storage pits and bomb-shelter trenches; high dirt butts where the planes could synchronize their machine guns fired through the whirring propeller blades, and, for night-bombing or night reconnoissance squadrons, landing and signal light systems run by generators mounted on trucks.

The air depots lie back of the combat zone and are large airdromes plus a repair base, replacement station (both for men and machines), and general supply and commissary stores. The main characteristics were the railroad sidings, the shops, and the housing for a personnel of three thousand or more, rather than the six to eight hundred on a flying field. Also there were the emergency landing fields, without any buildings, some just back of the artillery pits where the "busses" shot up over "No Man's Land" could find refuge, and others a hundred miles back for the "ferry pilot," should the new plane develop engine trouble when he was flying up from the big production or training centers far to the south.

Among the adjuncts to the advanced air service were the protective anti-aircraft batteries, the huge listening drums, the "light-houses" scattered along the front for the use of the night bombers, and the headquarters settlements from which ramified the control of the aeronautical organization covering the American sector.

A POST-WAR CONSTRUCTION PROGRAM

THE BUILDING BUREAU *of the* INTERNATIONAL COMMITTEE *of the* Y.M.C.A.

PART II

By Charles C. May

IN THE previous number we sketched the organization and activities of the Building Bureau of the International Committee of the Y. M. C. A. We showed that it is a technical board within the general organization, devoting itself to the task of insuring the production of the best buildings, architecturally, functionally, and financially, which can be devised; that the bureau does not usurp any of the functions of the architect, but makes available for his use a vast fund of information both in planning principles, points of operation, and in every minutest detail of design and material. We spoke of the bureau's two classes of service—the Complete, in which preliminary sketches up to the point of selecting a plan, are prepared by the Bureau itself, and the Advisory, in which the Architect prepares the studies, with the co-operation of the central body; we spoke, too, of the contractual relations between bureau, owner (that is, the local Y. M. C. A.) and Architect, pointing out the reasons why a fixed fee, determined in advance, is preferred to a percentage commission; we also touched upon some of the processes of analysis by which every plan is subjected to an acid test as to initial cost, durability, and maintenance charges before final approval by the organization.

Upon reading for the first time of the appearance of a new bureau of whatever nature, one's primary reaction is rather likely to be one of weariness. For it is both true and unfortunate that official bureaus have, in a multitude of cases, fallen very much short of the promise of their prospectus. And it is freely admitted that there are certain dangers which are likely to appear, so that the sooner they are frankly faced the more easily may they be avoided. These dangers seem to be inherent in the official bureau as such. For the moment we are interested in them as they might affect the Building Bureau of the International Committee of the Y. M. C. A.

The first tendency is for a bureau to become, if you please, bureaucratic—to adopt a formula and apply it to every problem as it appears. This is a form of disease which has often attacked officialdom—one which is most prominent in having made certain departments a byword within the nation. The public has sometimes come to feel that it is more important to know the formula and to meet it than to offer a solution of the problem. One of the chief virtues, then, which must be sought after and clung to by any bureau is that of continued open-mindness.

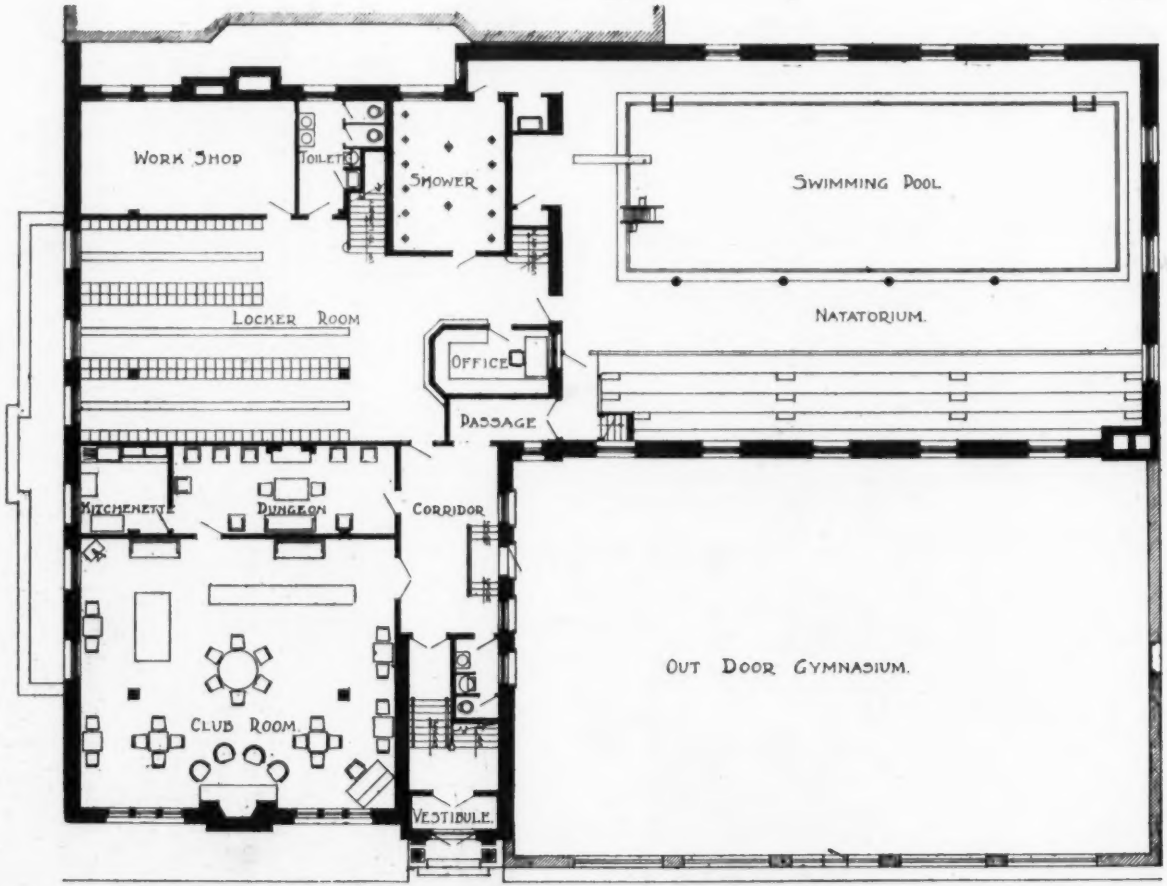
Besides the tendency toward dogmatism, there is on the other hand the possibility of stagnation.

In governmental work, the civil-service job has not attained fame in the production and retention of high-spirited, keen, animated service. Dry rot, once started, is not an easy thing to stop, and wherever the element of routine becomes paramount in a job the germ of dry rot is present.

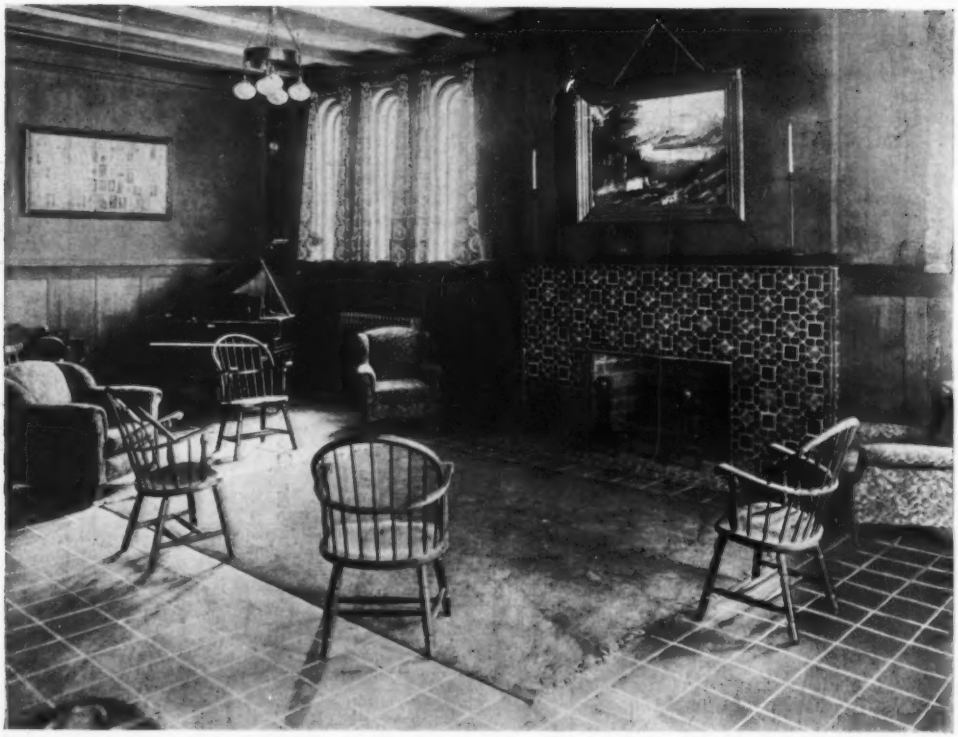
We should not feel free to speak so gloriously of the pitfalls that lie in wait for the official bureau, if we felt that these evils were destined immediately to lay hold upon the Building Bureau of the Y. M. C. A. Quite on the contrary, we believe that there are good reasons for expecting this particular bureau to

BOYS' BRANCH OF THE Y. M. C. A. AT DULUTH, MINNESOTA.

LOBBY OF THE BOYS' BRANCH OF THE Y. M. C. A. AT DULUTH, MINNESOTA.



BASEMENT FLOOR PLAN OF THE BOYS' BRANCH OF THE Y. M. C. A. AT DULUTH, MINNESOTA.



A CORNER OF THE LOBBY. BOYS' BRANCH OF THE Y. M. C. A. AT DULUTH, MINNESOTA.

avoid these pitfalls altogether. To examine some of these reasons—first, the element of routine work is, comparatively, very small indeed. Plans submitted to the Building Bureau are examined, not primarily to find out whether a set of laws have been complied with—they must rather be analyzed in the most painstaking way to prove whether or not they meet broad requirements, dictated by general principles. It is not a question of whether sizes of plumbing pipes are within the code; but of whether, with the existing conditions, site, appropriation and the rest of it, the proposed plan offers the best solution.

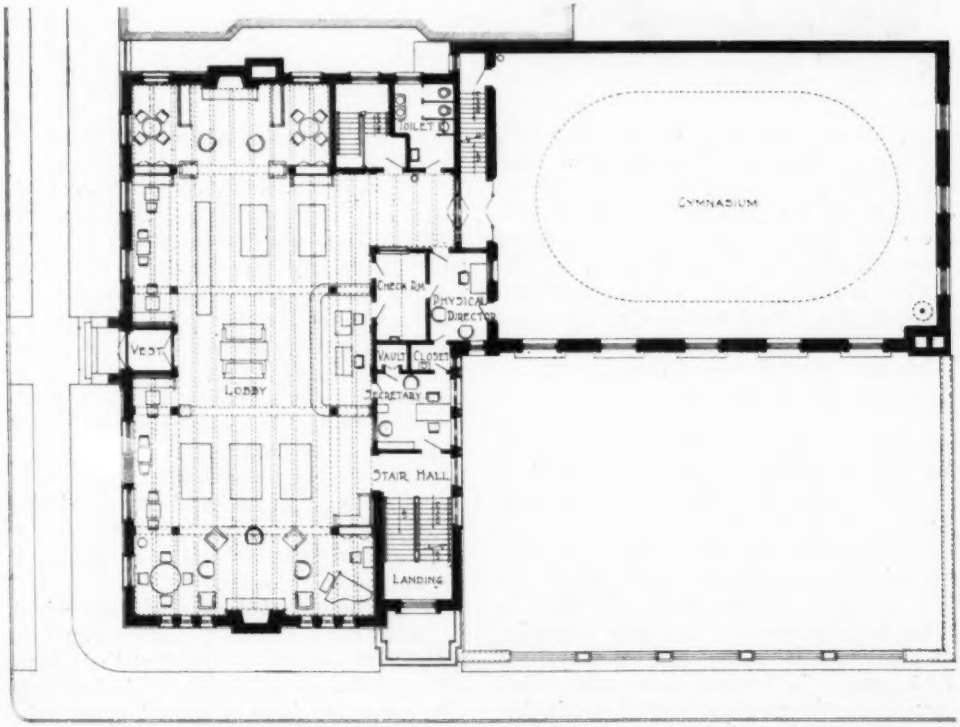
And this brings up at once a second point. In the process of this analysis and testing, the bureau is brought constantly into touch with the mind of the designer —a mind which is attacking the problem freshly, from a new angle, and bringing the viewpoint of another personality to bear upon the issue. Assuming that there were a tendency within the bureau toward relaxing this constant contact with a succession of professional planners—not junior draughtsman sent to "file drawings," but principals in whose minds the design had its conception, and who are ready to defend their mental offspring with some spirit—this sort of contact (such constant meeting of minds) is admirably adapted to produce constructive thinking.

Add to these another item—that each case is an individual problem, and must be studied *de novo*. The size and character of the city where the proposed building is to be set up, the different classes of membership anticipated, their relative numbers and importance, the kind of service the organization proposes to give them—all these and a half-dozen more considerations are variables which must be determined in the individual case, and examined before acceptance. In effect, the bureau must go through all

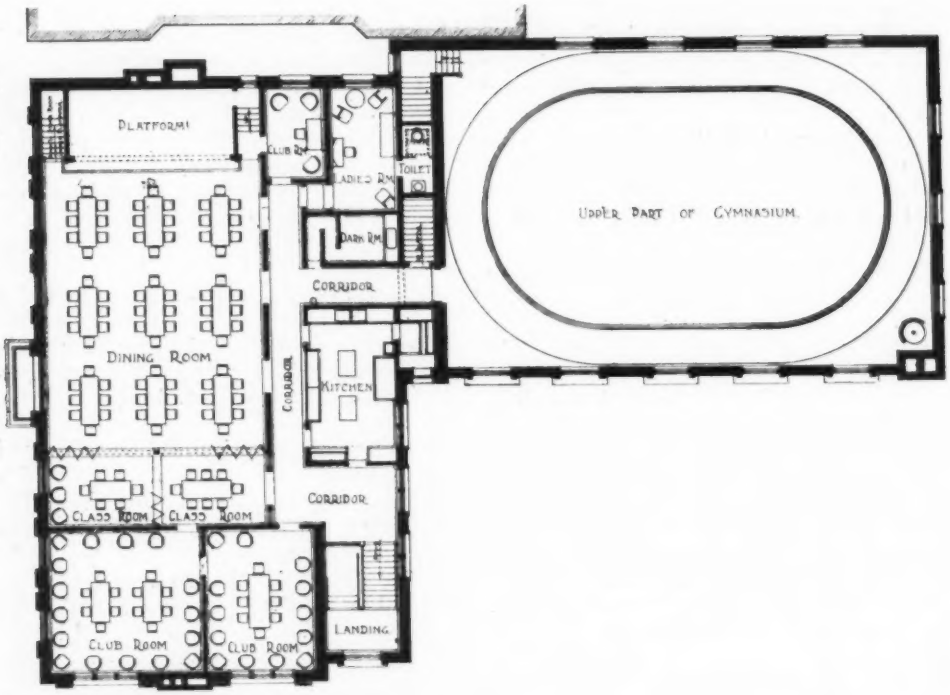
the processes of preliminary studying, sketching, comparing and eliminating which must be passed through in the development of plans in any architectural office.

But the most salutary feature of the whole situation is found in the nature of the work itself. As we noted, in passing, last month, the Y. M. C. A. building is first of all a planning problem and one which is by no means a static proposition; it is constantly in process of evolution, and the bureau must perforce keep pace with the current or become submerged. Not long ago an architect who specializes in schools published a book in which was given a great amount of information, detailed and illustrated—apparently the whole story of school design. "But look here," said his friends, "you have spent years collecting this information. How can you afford to hand it out to the public in this fashion?" "That's all right," the architect answered, "by the time these schools are published I'll be building them some other way." His experience of the rapidly changing practice in school design is hardly exaggerated as applied to that of the Y. M. C. A. building. What was standard yesterday is obsolete today; what is to become standard tomorrow must be the result of diligent study today.

We have been wont to make large statements as to the speed of developments during the last century; but today we know that more fundamental changes have been packed into the past four years than occurred in any of the previous periods, a dozen times as long. If, then, good architectural practice has previously been in a continual state of revision and shift and advance, we must expect with the new era of construction a definite speeding up of the process of evolution in methods and procedure. To keep abreast of the times will be no small job; to keep ahead of them, to foresee tendencies



FIRST FLOOR PLAN OF THE BOYS' BRANCH OF THE Y. M. C. A. AT DULUTH, MINNESOTA.



SECOND FLOOR PLAN OF THE BOYS' BRANCH OF THE Y. M. C. A. AT DULUTH, MINNESOTA.

and to anticipate needs will tax the ability of any bureau, no matter how keen the personnel. Taking these features into account, we are justified in feeling that the conditions surrounding the Building Bureau of the Y. M. C. A. are decidedly different from those usually attendant upon departmental work; that the most potent factors will work toward, instead of against, the effective life and influence of the organization.

To make more concrete by illustration some of the newer lines along which the bureau is working, it might be well to describe more in detail the Community Type of Y. M. C. A. Building, which was mentioned last month. This is an outgrowth from a class of work which has been going on for a considerable time in the rural districts, in residential suburbs, and oftentimes in the county seats. It had come to be known within the organization as the non-equipment work, because the Y. M. C. A. has sought, without a building of its own, to organize and develop the recreational life of such districts.

It has been found, however, that, using all the equipment available in the community, there is not enough properly to accommodate the various units when organized. The problem therefore becomes the double one of producing the organization and then of housing it. This the Y. M. C. A. undertakes to do in its Community Type of building—a place where a number of local units of social life may be assured of meeting rooms, social rooms, gymnasium, etc., all with adequate equipment and reserved for their individual use on certain evenings arranged in schedule form by the local secretary.

It is obvious that the building which is to express such a program must be planned along rather different lines from those of the usual Y. M. C. A. building. The emphasis here is placed upon independence of several equally important units rather than upon the central organ-

PER CENT of CUBICAL CONTENTS OBTAINED in ANALYZING 6 ACTUAL BUILDINGS.

TYPE OF BUILDING	ACTIVITIES				GEN'L UTILITIES		MEMBERSHIP FEATURES		WHOLE BUILDING	
	SOCIAL	RELIGIOUS EDUCATION	PHYSICAL	SERVICE	HOUSE	MECHANICAL	ACTIVITIES	GENERAL UTILITIES	ADMINISTRATION	MEMBERSHIP FEATURES	DORMITORIES
LARGE INDUSTRIAL PLANT BLDG	26%	27%	37%	10%	74%	26%	76%	22%	2%	83%	17%
SMALL " COMMUNITY BLDG	29%	35%	36%	—	66%	34%	88%	11%	1%	91%	9%
TYPICAL BLDG FOR MEDIUM SIZED CITY	20%	14%	63%	3%	74%	26%	84⅔%	14%	1⅓%	76%	24%
" " " SMALL " "	29%	3%	61%	7%	68%	32%	82%	14%	4%	77%	23%
BRANCH " " LARGE CITY	27%	6%	59%	8%	70%	30%	81%	16%	3%	57%	43%
SMALL TOWN BLDG	22%	8%	68%	2%	57%	43%	80%	18%	2%	80%	20%

PLAN SHOWING RELATIVE SPACE ALLOTTED TO Y. M. C. A. ACTIVITIES.

ization, for there may be several groups operating in the building on the same evening.

For this type of building, with so many separate activities going on at once, side by side but quite independent of one another, the units within the building must be flexible, interchangeable, and yet capable of central control. This will be furnished by the local secretary, who might combine the office of building manager and physical director. In the building also will be offiices for the community-wide secretaries of the Y. M. C. A. and Y. W. C. A.; so that these organizations may keep in touch with the life of the entire town through this focal point of its social groups.

Another of the newer branches of work, the industrial, has had the result of producing for the new period of permanent building a Y. M. C. A. type somewhat akin in its simplicity and economy to the more substantial of the buildings erected under the war construction program. This part of the outfit will be found, as its name implies, in the larger industrial centres, and at the plants themselves in cases where single industries employ great numbers of men and women. There are two kinds of work carried on under these conditions—first, that of Americanization. For this there is established a branch building within the home colony where the foreign elements live, and the work is primarily aimed at the teaching of the English language, preparation for citizenship, and acquaintance with American institutions and ideals. The building combines with class rooms for this educational work, social units and gymnasium, which also, in small buildings, is fitted with moving picture equipment. There is furthermore a refreshment bar, so that the building may become attractive enough to compete successfully both with the movie and the saloon.

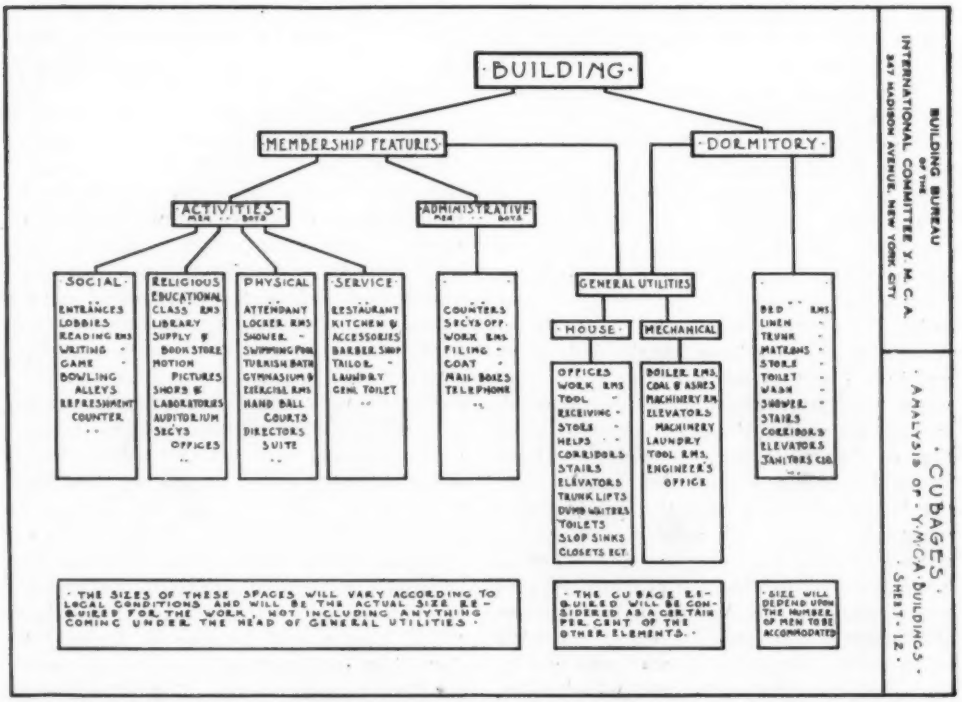
Besides these neighborhood units there are the plant buildings which occupy the general position of a central branch Y. M. C. A. These often make provision in their social units and equipment for men, women, and boys, including a gymnasium and again the moving picture auditorium.

Aside from the development of new types of buildings to meet new requirements and conditions, the Building Bureau is carrying on intensive studies of the older types. It is, for example, making careful surveys of the possibilities of lots of varying sizes and shapes. That is, it is collecting information as to just what can be expected on the city lot of say, 50, 60, 75 or 80 ft. by 100 feet deep; then the same widths by a greater depth, up to 200 feet, which is about the limit of variation encountered in practice. And it should be noted that the purpose of these studies is not that of producing a set of standardized plans to be used upon a site of any given size like a ready-to-apply plaster. It is rather in order to be equipped with real knowledge as to the possibilities and impossibilities in these various cases, so that when a local building committee turns up saying "we have a lot 80 by 150 feet, and we propose to put on it a building of such and such accommodations," the Building Bureau will be ready to come back with an answer bearing weight. They will say either: "Yes, that would be fine if it could be done, but, unfortunately, it does not work out," or in rarer cases of good fortune: "Yes, you can do all that, and besides you

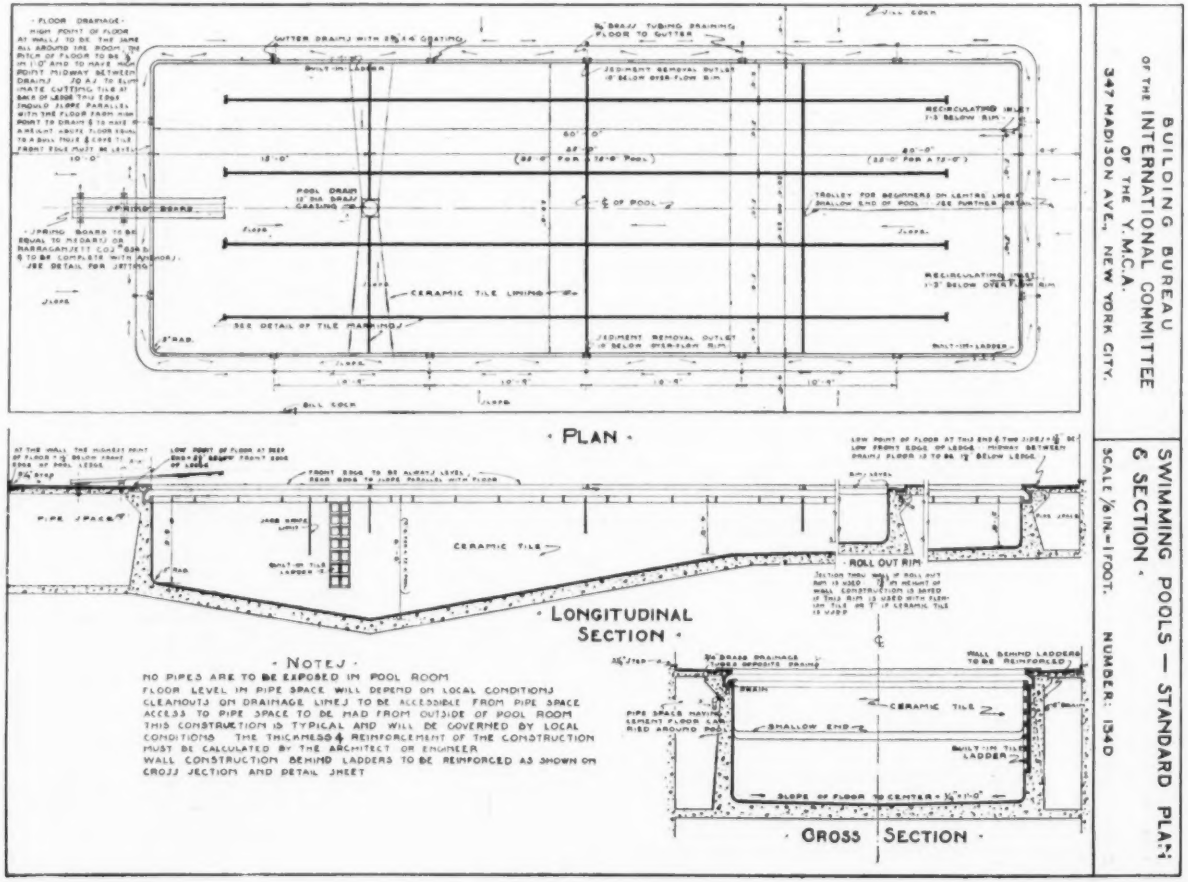
can get in this and that additional." The Bureau is also tackling the closely related questions involved in the cost of land as against the height of the building; the combination of a larger lot on low-priced land, with a building of much outside wall, foundation and roof, as against the smaller plot on high-priced land with a building more compact, but higher, with more structural steel and more elevators to build and run.

Still another form of analysis which should produce valuable results is one seeking to determine what proportionate parts of the building should normally be occupied by its several forms of activity. To explain this somewhat: In every building of every size there are certain subdivisions of function which occupy their several fractions of the whole. The Building Bureau are asking themselves whether there is a normal fraction to which each subdivision is entitled, and by which, in the case of new plans, whether of the hundred thousand dollar or the half-million type, a wasteful layout may be quickly exposed by its deviation from the normal. Such laws can be propounded only by the analysis of great numbers of plans, testing the normal and accounting for the abnormal, just as, in a parallel case, the community planner knows that if a housing subdivision shows 25 per cent. of its area in roads, 10 per cent. in parks and 65 per cent. in salable lots, he has not gone far astray.

The Building Bureau has carried its analysis down to the ultimate subdivision—that of the individual room. Beginning, however, at the other end, the main headings are: first, the Activities Section. This carries its own subdivisions, which explain themselves in the naming—there are the social, the religious and educational, the physical, and the service. This last, however, means service not in the sense of kitchen and pantry dependencies, but organization service to its members and others who use the building. The second main section is that of Administration, including, of course, all the offices and accessories



CUBAGE ANALYSIS AND INTER-RELATION OF DEPARTMENTS IN Y. M. C. A. BUILDINGS.


BUILDING BUREAU
OF THE INTERNATIONAL COMMITTEE
OF THE Y.M.C.A.
347 MADISON AVE., NEW YORK CITY.
SWIMMING POOLS — STANDARD PLAN
& SECTION
SCALE 1/8 IN. = 1 FOOT.
NUMBER: 1340
PLAN
LONGITUDINAL SECTION
CROSS SECTION
NOTES
NO PIPES ARE TO BE EXPOSED IN POOL ROOM
FLOOR LEVEL IN PIPE SPACE WILL DEPEND ON LOCAL CONDITIONS
CLEANOUTS ON DRAINAGE LINES TO BE ACCESSIBLE FROM PIPE SPACE
ACCESS TO PIPE SPACE TO BE HAD FROM OUTSIDE OF POOL ROOM
THIS CONSTRUCTION IS TYPICAL AND WILL BE GOVERNED BY LOCAL CONDITIONS. THE THICKNESS & REINFORCEMENT OF THE CONSTRUCTION MUST BE CALCULATED BY THE ARCHITECT OR ENGINEER.
WALL CONSTRUCTION BEHIND LADDERS TO BE REINFORCED AS SHOWN ON CROSS SECTION AND DETAIL SHEET
CERAMIC TILE LINING
ROLL OUT RIM
SHALLOW END
BUILT-IN LADDER
TROLLEY FOR BEGINNERS ON LADDERS
RECIRCULATING INLET
SEDIMENT REMOVAL OUTLET
SPRING BOARD
POOL DRAIN
PIPE SPACE
CERAMIC TILE
DRAIN

STANDARD TYPE OF SWIMMING POOL FOR Y. M. C. A. BUILDINGS.

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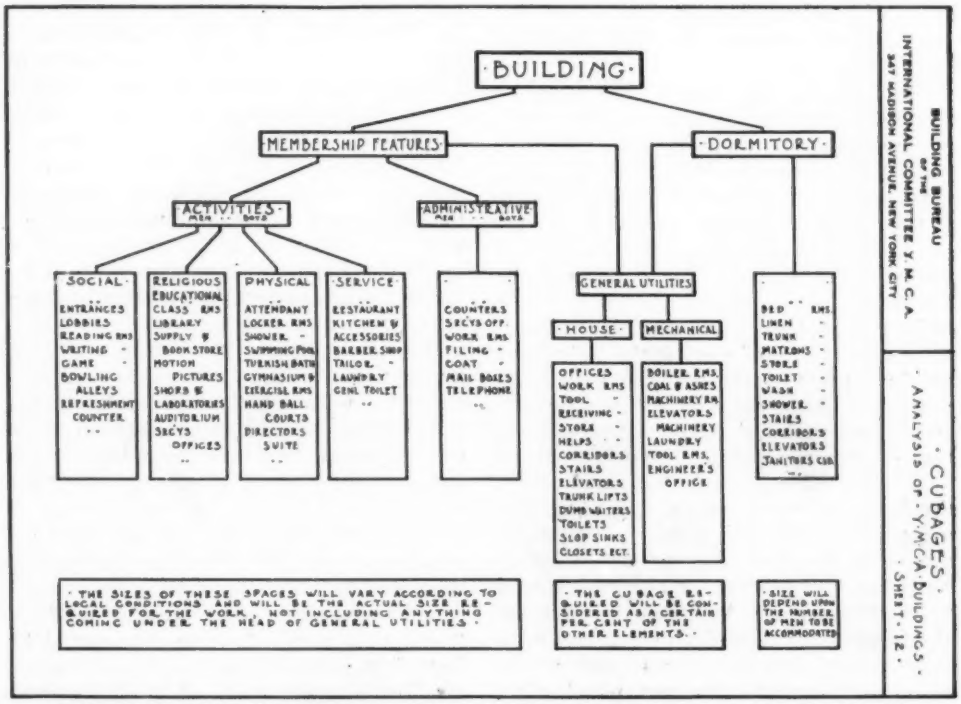
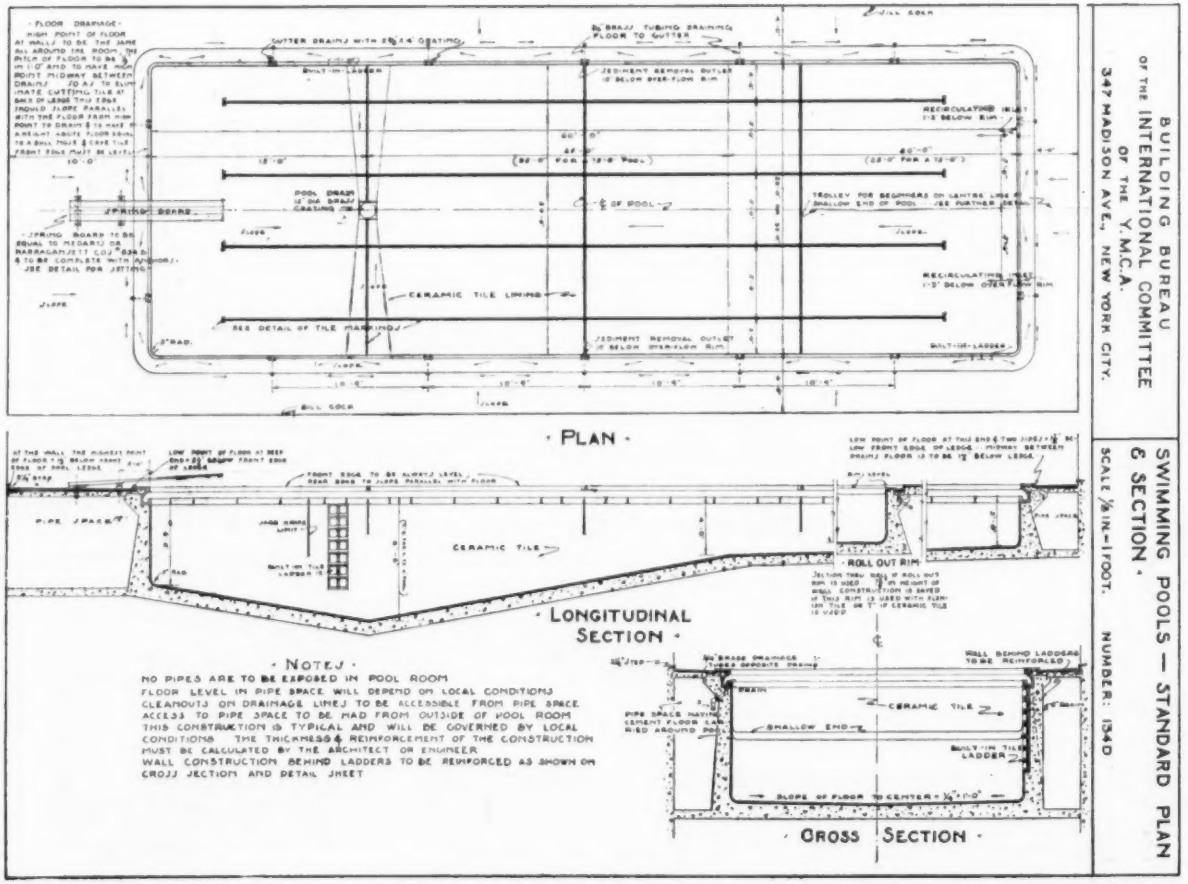

BUILDING
MEMBERSHIP FEATURES
DORMITORY
ACTIVITIES
ADMINISTRATIVE
SOCIAL
ENTRANCES LOBBIES READING RMS WRITING GAME BOWLING ALLEYS REFRESHMENT COUNTER
RELIGIOUS EDUCATIONAL
CLASS RMS LIBRARY SUPPLY & BOOK STORE MOTION PICTURES SHOPS & LABORATORIES AUDITORIUM SECYS OFFICES
PHYSICAL
ATTENDANT LOCKER RMS SHOWER SWIMMING POOL TURKISH BATH GYMNASIUM & EXERCISE RMS HAND BALL COURTS DIRECTORS SUITE
SERVICE
RESTAURANT KITCHEN & ACCESSORIES BARBER SHOP TAILOR LAUNDRY GENL TOILET
COUNTERS SECYS OFF. WORK RMS FILING COAT MAIL BOXES TELEPHONE
GENERAL UTILITIES
HOUSE
MECHANICAL
OFFICES WORK RMS TOOL RECEIVING STORE HELPS CORRIDORS STAIRS ELEVATORS TRUNK LIFTS DUMB WAITERS TOILETS SLOP SINKS CLOSETS ECT.
BOILER RMS COAL & ASHES MACHINERY RM ELEVATORS MACHINERY LAUNDRY TOOL RMS ENGINEER'S OFFICE
BED RMS LINEN TRUNK MATRONS STORE TOILET WASH SHOWER STAIRS CORRIDORS ELEVATORS JANITORS CLS
THE SIZES OF THESE SPACES WILL VARY ACCORDING TO LOCAL CONDITIONS AND WILL BE THE ACTUAL SIZE REQUIRED FOR THE WORK, NOT INCLUDING ANYTHING COMING UNDER THE HEAD OF GENERAL UTILITIES
THE CUBAGE REQUIRED WILL BE CONSIDERED AS A CERTAIN PER CENT OF THE OTHER ELEMENTS.
SIZE WILL DEPEND UPON THE NUMBER OF MEN TO BE ACCOMMODATED
BUILDING BUREAU OF THE INTERNATIONAL COMMITTEE Y. M. C. A. 347 MADISON AVENUE, NEW YORK CITY
CUBAGES
ANALYSIS OF Y.M.C.A. BUILDINGS
SHEET - 12 -

CUBAGE ANALYSIS AND INTER-RELATION OF DEPARTMENTS IN Y. M. C. A. BUILDINGS.


PLAN
LONGITUDINAL SECTION
CROSS SECTION
NOTES
CERAMIC TILE LINING
ROLL OUT RIM
SPRING BOARD
BUILT-IN LADDER
NO PIPES ARE TO BE EXPOSED IN POOL ROOM
FLOOR LEVEL IN PIPE SPACE WILL DEPEND ON LOCAL CONDITIONS
CLEANOUTS ON DRAINAGE LINES TO BE ACCESSIBLE FROM PIPE SPACE
ACCESS TO PIPE SPACE TO BE MAD FROM OUTSIDE OF POOL ROOM
THIS CONSTRUCTION IS TYPICAL AND WILL BE GOVERNED BY LOCAL CONDITIONS. THE THICKNESS & REINFORCEMENT OF THE CONSTRUCTION MUST BE CALCULATED BY THE ARCHITECT OR ENGINEER
WALL CONSTRUCTION BEHIND LADDERS TO BE REINFORCED AS SHOWN ON CROSS SECTION AND DETAIL SHEET

BUILDING BUREAU
OF THE INTERNATIONAL COMMITTEE
OF THE Y.M.C.A.
347 MADISON AVE., NEW YORK CITY.

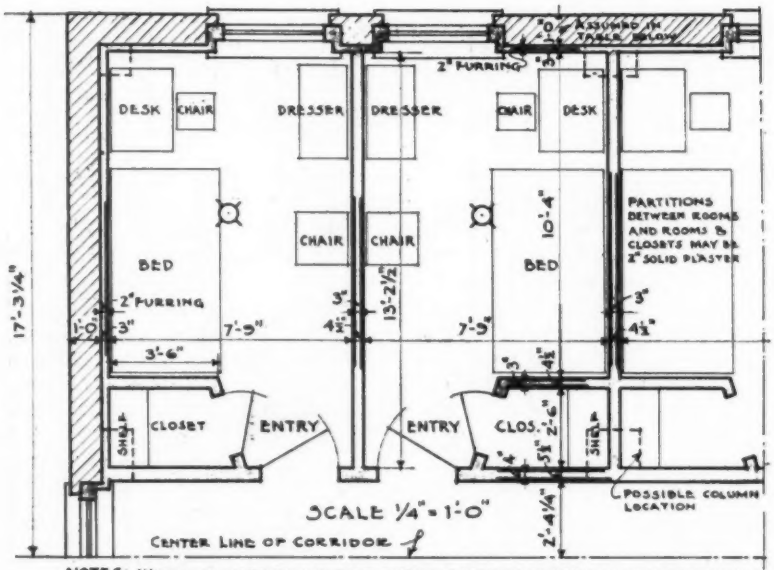
SWIMMING POOLS — STANDARD PLAN & SECTION

SCALE 1/8 IN = 1 FOOT. NUMBER: 1340

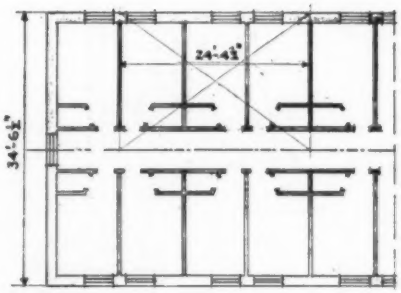
STANDARD TYPE OF SWIMMING POOL FOR Y. M. C. A. BUILDINGS.

BUILDING BUREAU
OF THE INTERNATIONAL COMMITTEE
OF Y-M-C-A
347 MADISON AVE., NEW YORK CITY

DORMITORIES - TYPE "A" SINGLE ROOMS
- MINIMUM SIZE -
SCALE 1/4" & 1/16" = 1'-0" NUMBER 601 A



NOTES: WHERE CLIMATE WILL PERMIT, FURRING MAY BE OMITTED ON EXTERIOR WALLS. MINIMUM ROOM SIZES ARE GIVEN HERE. IF COLUMNS ARE REQUIRED, AS SHOWN BY BROKEN LINES, THESE SIZES MAY BE INCREASED. HEATING DEPENDS ON CONDITIONS.



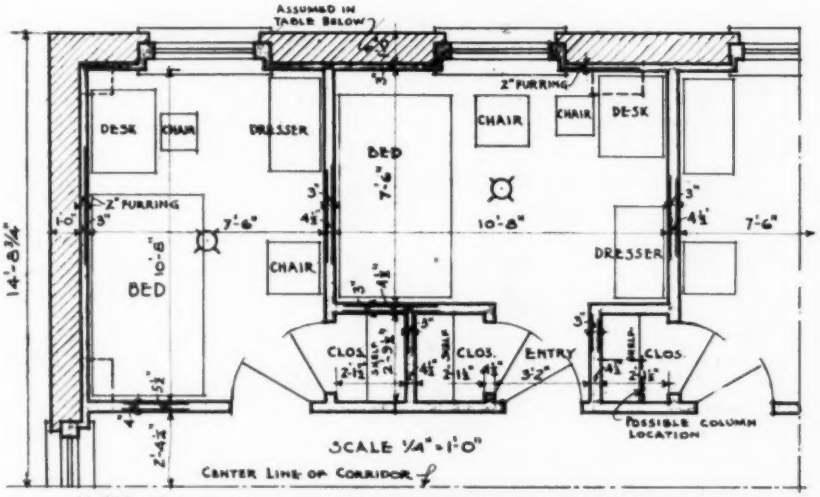
SCALE 1/16" = 1'-0"

TABLE FOR COMPARISON BASED ON 3 ROOM GROUP	
AREA OF SINGLE ROOM EXCLUSIVE OF CLOS. & ENTRY	805Q.FT.
AREA OF GROUP	421 SQ.FT.
AREA OF SINGLE CLOS.	9 SQ.FT.
AREA OF GROUP CLOS.	27 SQ.FT.
CUBICAL CONTENTS - 10'-0" ASSUMED HEIGHT FL. TO FL	4,210 CU.FT.
CORRIDOR PARTITION	24'-4 1/2" LONG
OTHER PARTITIONS	58'-11" LONG
NUMBER OF DOORS	6

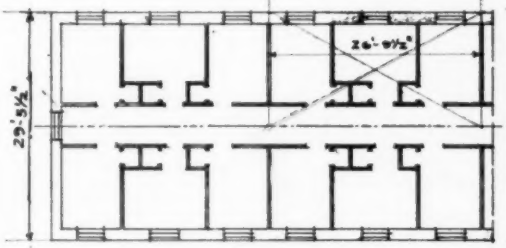
"TYPE A" SINGLE ROOM DORMITORY
PLAN FOR Y. M. C. A. BUILDINGS.

BUILDING BUREAU
OF THE INTERNATIONAL COMMITTEE
OF Y M C A
347 MADISON AVE., NEW YORK CITY

DORMITORIES - TYPE "B" - SINGLE ROOMS
~ MINIMUM SIZE ~
SCALE 1/4" & 1/16" = 1'-0" NUMBER 601 - B



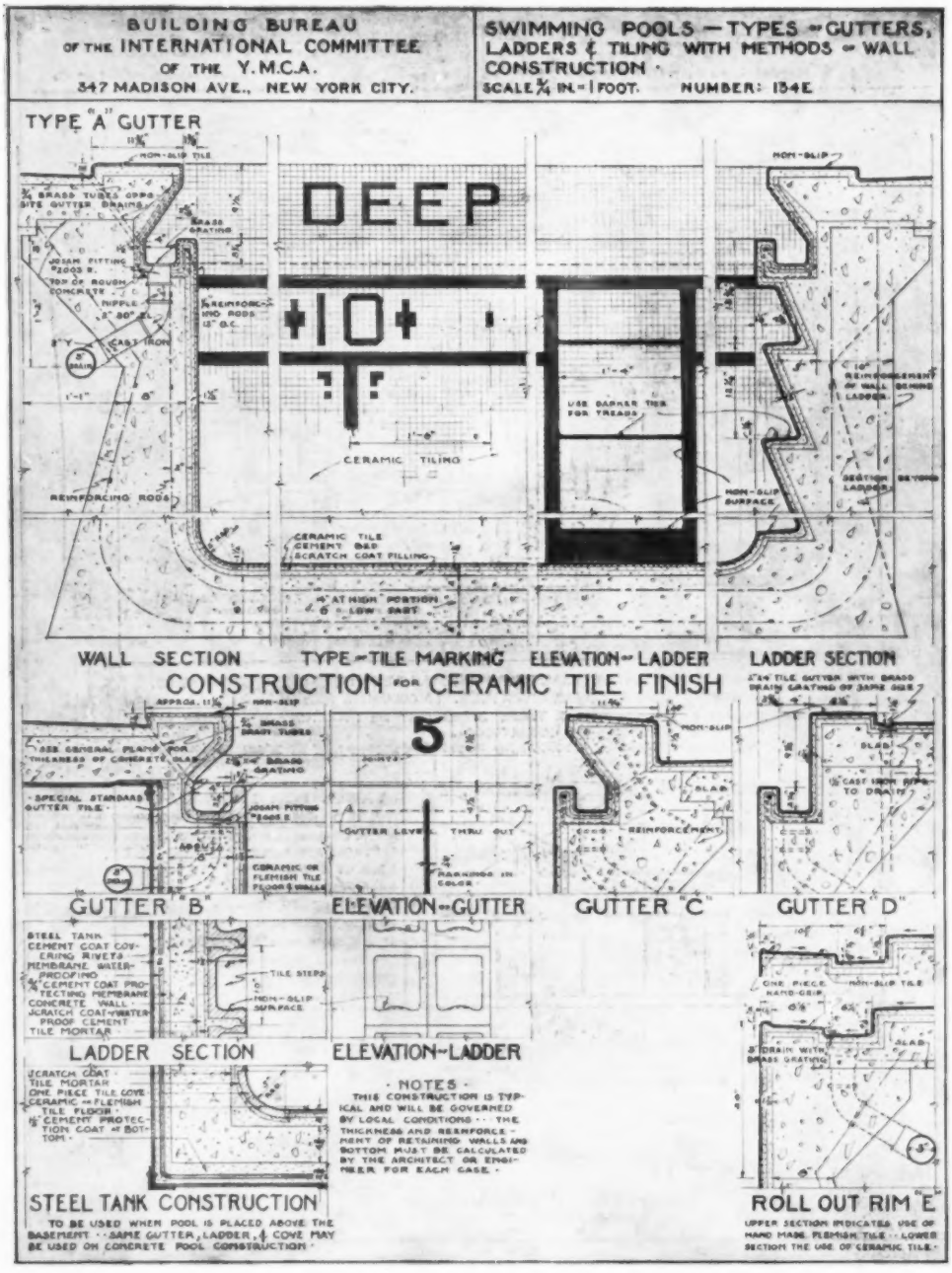
NOTES: WHERE CLIMATE WILL PERMIT FURRING MAY BE OMITTED ON EXTERIOR WALLS.
MINIMUM ROOM SIZES ARE GIVEN HERE. IF COLUMNS ARE REQUIRED, AS SHOWN BY BROKEN LINES, THESE SIZES MAY BE INCREASED.
HEATING DEPENDS ON CONDITIONS.
PARTITIONS BETWEEN ROOMS AND ROOMS & CLOSETS MAY BE 2" SOLID PLASTER



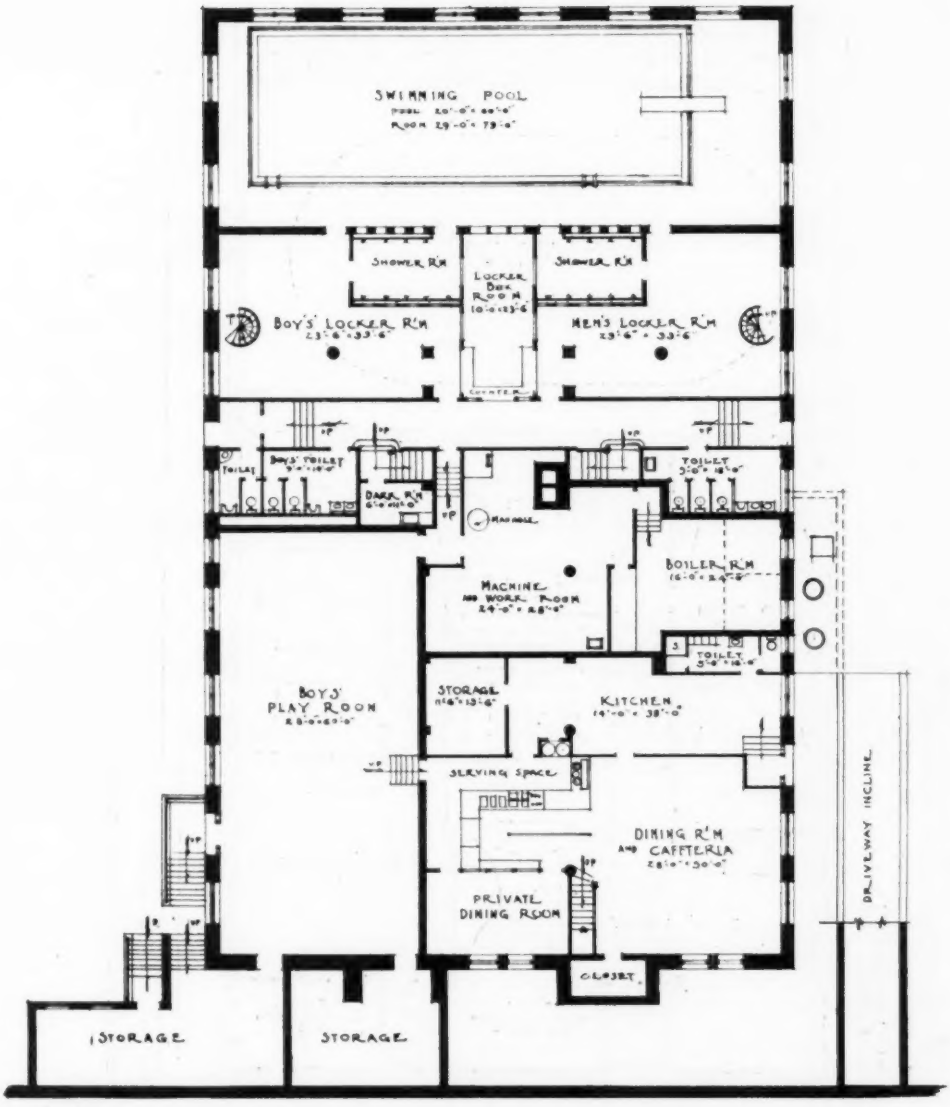
SCALE 1/16" = 1'-0"

TABLE FOR COMPARISON BASED ON 3 ROOM GROUP	
AREA OF SINGLE ROOM EXCLUSIVE OF CLOSET AND ENTRY	80 SQ.FT.
AREA OF GROUP	394 SQ.FT.
AREA OF SINGLE CLOS.	6 SQ.FT.
AREA OF GROUP CLOS.	18 SQ.FT.
CUBICAL CONTENTS - 10'-0" ASSUMED HEIGHT FLOOR TO FLOOR	3940 CU.FT.
CORRIDOR PARTITION	26'-9 1/2" LONG
OTHER PARTITIONS	47'-10 1/2" LONG
NUMBER OF DOORS	6

"TYPE B" SINGLE ROOM DORMITORY
PLAN FOR Y. M. C. A. BUILDINGS.

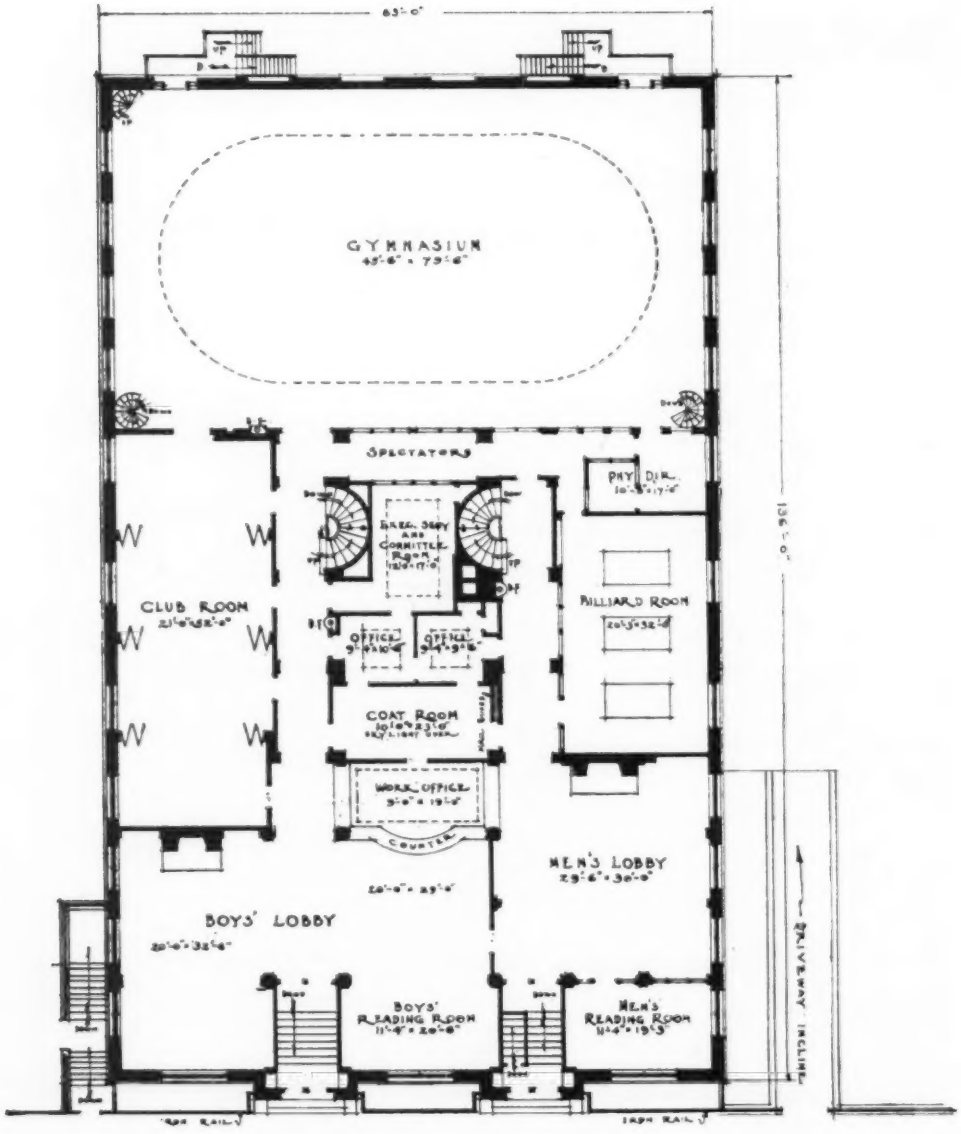

BUILDING BUREAU
OF THE INTERNATIONAL COMMITTEE
OF THE Y.M.C.A.
347 MADISON AVE., NEW YORK CITY.
SWIMMING POOLS — TYPES — GUTTERS, LADDERS & TILING WITH METHODS — WALL CONSTRUCTION.
SCALE ¾ IN. = 1 FOOT. NUMBER: 134E
TYPE "A" GUTTER
DEEP
10
WALL SECTION
TYPE — TILE MARKING
ELEVATION — LADDER
LADDER SECTION
CONSTRUCTION FOR CERAMIC TILE FINISH
GUTTER "B"
ELEVATION — GUTTER
GUTTER "C"
GUTTER "D"
LADDER SECTION
ELEVATION — LADDER
STEEL TANK CONSTRUCTION
TO BE USED WHEN POOL IS PLACED ABOVE THE BASEMENT — SAME GUTTER, LADDER, & COVE MAY BE USED ON CONCRETE POOL CONSTRUCTION.
NOTES
THIS CONSTRUCTION IS TYPICAL AND WILL BE GOVERNED BY LOCAL CONDITIONS — THE THICKNESS AND REINFORCEMENT OF RETAINING WALLS AND BOTTOM MUST BE CALCULATED BY THE ARCHITECT OR ENGINEER FOR EACH CASE.
ROLL OUT RIM "E"
UPPER SECTION INDICATES USE OF HAND MADE FLEMISH TILE — LOWER SECTION THE USE OF CERAMIC TILE.

TYPE DETAILS OF SWIMMING POOLS FOR Y. M. C. A. BUILDINGS.



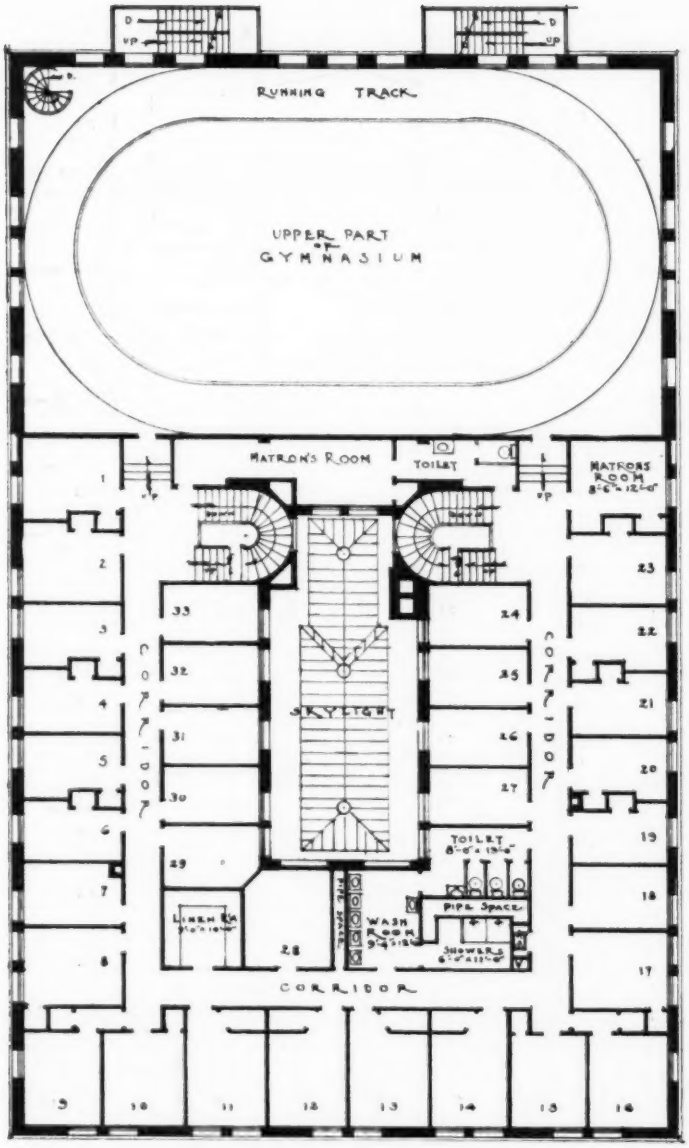
GROUND FLOOR PLAN
SCALE 1/16" = 1'-0"

NORTH SIDE BOYS' CLUB
OF THE Y·M·C·A·
CHICAGO ✿ ILLINOIS



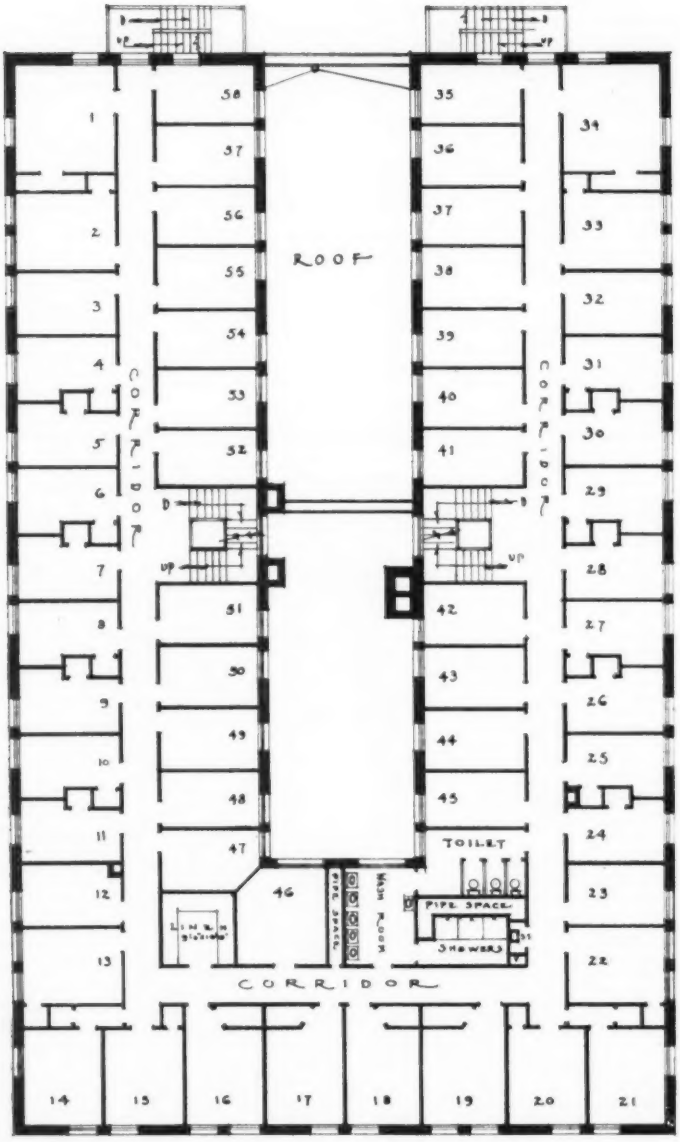
MAIN FLOOR PLAN
SCALE 1/16" = 1'-0"

NORTH SIDE BOYS CLUB
OF THE Y·M·C·A·
CHICAGO ◈ ILLINOIS



SECOND FLOOR PLAN
SCALE 1/16 = 1'-0"

NORTH SIDE BOYS CLUB
OF THE Y·M C·A·
CHICAGO ILLINOIS



THIRD FLOOR PLAN
SCALE 1/16" = 1'-0"
(FOURTH FLOOR SIMILAR)

NORTH SIDE BOYS CLUB
OF THE Y·M C·A·
CHICAGO ILLINOIS

necessary for the organization in its carrying on of the work program. For the third section we have the Dormitories, including corridors and closets; and finally there is the section devoted to General Utilities. This takes care of such things as toilets, kitchen, serving rooms, etc., together making up the House Department, and also the boiler rooms, coal bunkers, pump and elevator machinery rooms, and such like, which make up the Mechanical Department of General Utilities.

Of course, certain of the large units in such a tabulation are definite and nearly constant, such for instance, as the swimming pool; but even there, its dependencies in the locker rooms, showers, etc., vary with the membership and the size of the building, so that the percentage of its area to the whole is more nearly accurate than one would offhand imagine.

Another special type of plan that is to be investigated by the Bureau is one which would prove most valuable in cases where peculiarities of site make excavation difficult or expensive. In every ordinary situation it may be assumed that economy in structural cost and in operation point to placing in a basement story not only the boiler room, coal bunkers, machinery rooms, and store rooms, but swimming pool, locker rooms and numbers of such utilitarian features. For the proper lighting and ventilating of this floor it has been customary on level sites to raise the main floor level to about five or six feet above the sidewalk. Supposing now, that a building site lay on ledge rock, with buildings adjoining at the lot lines, or supposing an extreme condition of water pressure; what, the bureau is asking, will be the net result in the showing of our building if we put it up without a basement at all? That is to say, the first floor level would be perhaps two feet above the sidewalk level, and that story would contain a combination of the features usually found on the first floor and in the basement; it thereby relegates to a second floor (assuming the lot size is not increased for the sake of the special type of building) some of the other rooms usually in close junction with the main administrative offices. The only excavation would then be for walls, for a low pipe gallery and for the heating plant. The building is thus pulled out of the ground or raised higher in the air, the total cubage remaining about constant. Whether this sort of alternative, when reduced to its lowest terms, can be propounded in the form of a law, may be doubted; local conditions cannot be eliminated and they have disconcerting ways of upsetting the most perfectly formed theorem; but there is no gainsaying the fact that such investigation will produce knowledge, and all added knowledge is in the line of progress.

Still another of the directions in which changed conditions can be noted is that of the increased emphasis which is being placed on the boys' work. In this the Y. M. C. A. is being followed by other organizations; the National Lawn Tennis Association has, in the past five years, revolutionized its attitude toward and its treatment of the youngsters. From being ignored or kicked off the courts as a nuisance, they have been elevated to a place where they are now given every facility and encouragement in the development of a healthy young body of players. So with Y. M. C. A. work; formerly the boys were either forgotten, or relegated to cramped quarters in a basement or second floor, being treated much in the light of a necessary evil. Gradually, a change has taken place, as the general organization has perceived that nothing is more important than providing the early implanting of the finest ideals of manhood, and that in doing so the best way is to gain the confidence and the interest of the man while he still is a boy. So the buildings immediately reflect the changed attitude, until at present the equipment for carrying on the boys' work is treated on an even basis in quality and in space with that of the men. We find now the boys provided with their own entrance (not an obviously side door, but a real one like the men's), their own lobby, social and clubrooms, lockers and all the rest. Indeed, the process has in a few cases been carried to its ultimate conclusion, and the boys have been furnished an entirely separate building. One of these, located at

Duluth, Minn., is illustrated herewith, and shows an excellently planned and very attractive building.

The Building Bureau of the International Committee of the Y. M. C. A. is a distinctly new era movement. It looks upon the constructional program that stretches before the organization in the big way which the project justifies. It puts the conduct of such construction, from the point of view of the organization, upon a business basis, and provides for the gathering of information such as will make the Bureau the final authority on every aspect of its subject; and, finally, it places before the architects of this country the opportunity to take part in planning one of the most important single classes of building in the constructive period which lies just ahead.

MODERN INDUSTRIAL PLANTS

By George C. Nimmons

Part VI-a

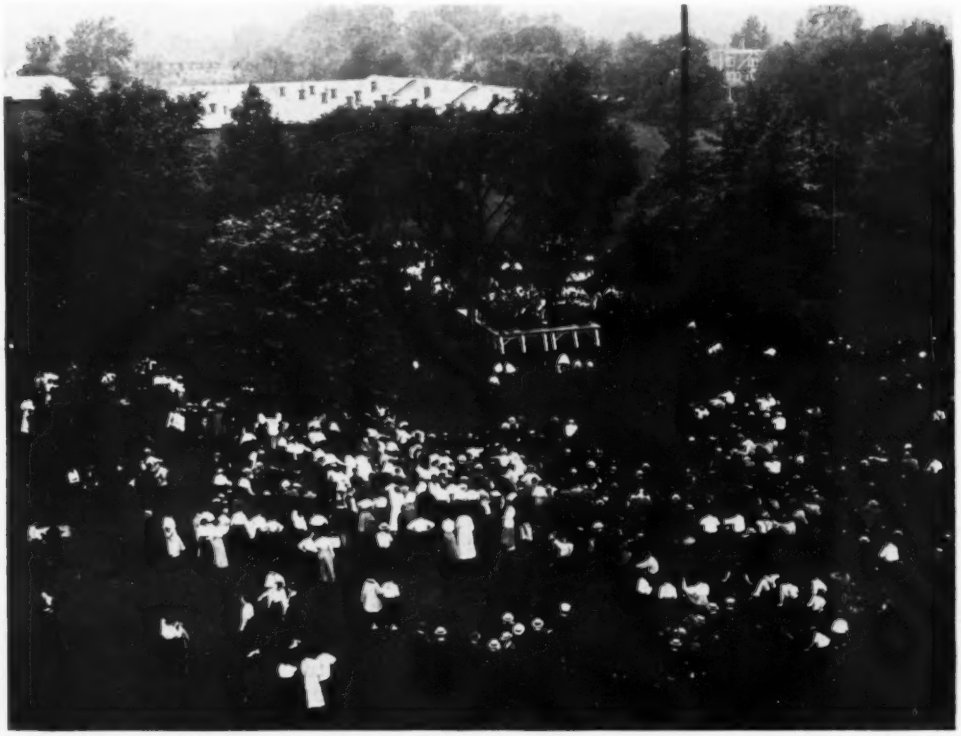
THE EXCESSIVE TURNOVER OF LABOR AND THE INFLUENCE OF EMPLOYE'S WELFARE WORK IN REDUCING IT.

IT requires a tremendous upheaval in the world's affairs to interfere perceptibly with the regular continuance of human activities, and especially in the industries where the momentum of daily necessities keeps turning the wheels of its operation in spite of almost any opposing force or agency. In the past there have been few occasions where anything seriously interfered, or even materially retarded, the continuous whirl of industrial progress. Yet the close of the war has brought about a condition where it appears as if a large part of the machinery of human activities has been stopped, and where the undertaking commonly called reconstruction is really more like the operation of getting the wheels to turn again with their accustomed velocity than it is like rebuilding. At any rate the people now have a chance to look the machinery over while part of it is at rest and the other part turning only slowly.

If there were no troubles or no defects, if there were no changes or alterations necessary, the starting and speeding up to old-time standards would give little concern. But the condition of things has been found to be such as to require the most serious consideration before starting up to make the new run.

Never before in this country has there been so much getting together and taking council as to new methods, new policies and new programs of action for the industries. Every trade and every branch of the industries have recently had their conventions and meetings at which the whole situation has been canvassed and studied with a view of disclosing all those resources and all those opportunities which promise to be most helpful in the new run of their existence.

The most promising opportunities for success do not any longer lie in the direction of labor-saving machinery, as that is already developed almost to its limits in every line, and is also possessed in common by all business competitors. No new advantages seem to lie in the direction of raw materials, their production, transportation or the salvaging or utilizing of discarded residues or parts of material for by-products. Neither is there anything new in science which offers material advantages over and above those which science has already so generously supplied in the past. Science seems to have already done its part, and will, of course, continue to play an essential part; and there is nothing new which it can supply for present purposes, but what all competitors already have. And so all of those things have been canvassed which made the industries successful in the past, and none of them have now been selected as the subjects which promise the most help for the immediate future. Strange as it may seem, the indus-



NOON CONCERT FOR EMPLOYES HELD IN KODAK PARK AT THE PLANT OF THE EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

tries have now come to a position where they look for the greatest relief and help, not from the material and practical things such as science can furnish, but from the influences and effects which come more from the arts and the teachings of social science than they do from anything else. It looks as though the day of art was really beginning to dawn; because the things which the industries now mostly need to build up their trade and to correct their present most troublesome defects are partly things from the arts. It may not be generally recognized that the arts form the source of these tendencies, but such is the case, and it will be appreciated in due time.

It has so come about in the searching examination and inspection which has been made of the condition of the industries since the close of the war that the greatest handicap to success now is the excessive turnover of labor. The present unrest of labor all over the world has also emphasized the importance of immediate action in this direction.

The turnover of labor is usually defined as the "hiring and firing" of employes. In order to keep the working force of a plant up to the number required for operation, it has become necessary universally to keep hiring employes continually far in excess of the number that should be required if they were even fairly permanent and constant in their positions. This problem is of serious concern; records and statistics recently gathered having disclosed the fact that the condition is not only having a bad influence on the character of work performed, but is causing a loss and waste of surprising proportions far beyond what had been generally ascribed to it.

The extent to which the turnover of labor has grown may be illustrated by some of the very interesting statistics and data that have been gathered on that subject.

LIVING ROOM IN FIRE DEPARTMENT HEADQUARTERS, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

FIRE DEPARTMENT OF THE EMPLOYES OF THE EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

CLASS OF FIRST AID ILLUSTRATING INSTRUCTIONS GIVEN EMPLOYES IN BANDAGING AND DRESSING INJURIES, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

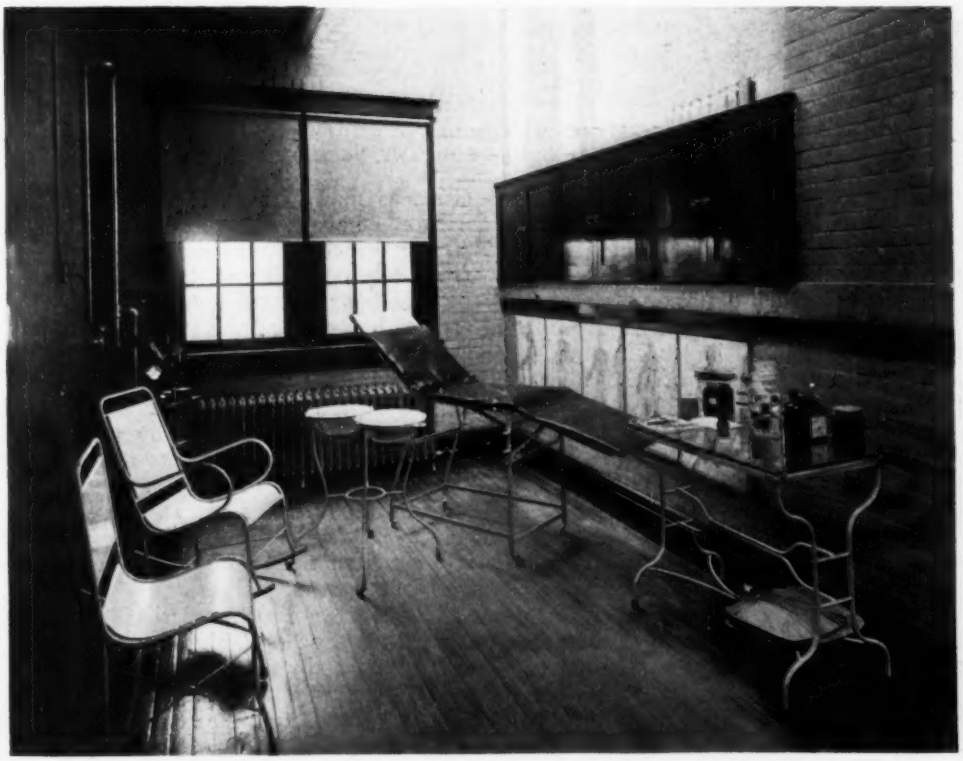
ASSEMBLY HALL FOR EMPLOYES, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

One of the most striking instances of this is the report of Mr. Magnus W. Alexander of West Lynn, Mass., on the fluctuation of labor in twelve industrial plants engaged in the metal industries, located in six different states. The material for this report was gathered during the year from January 1, 1912, to January 1, 1913, just before the war, when conditions were considered normal.

The products of these plants varied in size and kind from large steam engines down to fine tools and instruments, requiring from 300 to 10,000 employes at a single plant.

At the beginning of the year when the investigation started, the twelve plants had 37,274 employes and at the end of the year, December 31st, when the statistics were completed, the working force had been increased by 6,697 to take care of increased production, making a total of 43,971 employes. During the year, however, 35,874 dropped out of their employment for one reason or another, making it necessary to hire 42,571 new people during the year in order to keep all positions filled and supply the 6,697 additional employes needed for the increased production. In other words, it was necessary to hire six and one-third times as many people as the 6,697 new people who constituted the increase in the force for the year.

In accordance with mortality tables, the average length of service in factories is 31½ years for men and 23 years for women, and from these records Mr. Alexander computes the average death rate for the ordinary industry at one per cent of the total employes per year. Four per cent as a rule are sick each year long enough to necessitate their replacement temporarily or permanently. Eight per cent withdraw from service for unseen or unavoidable reasons, or are discharged for justifiable causes, and



EMPLOYES' FIRST AID ROOM, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

WOMEN EMPLOYES' DINING ROOM. A MEN'S DINING ROOM SIMILAR TO THIS IS ALSO PROVIDED. EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

about eight per cent in excess of actual need are usually kept on the payroll to take care of the normal fluctuation of production.

This leaves then approximately eighty per cent of the employes as the proportion which should be the permanent, steady working force of the average plant.

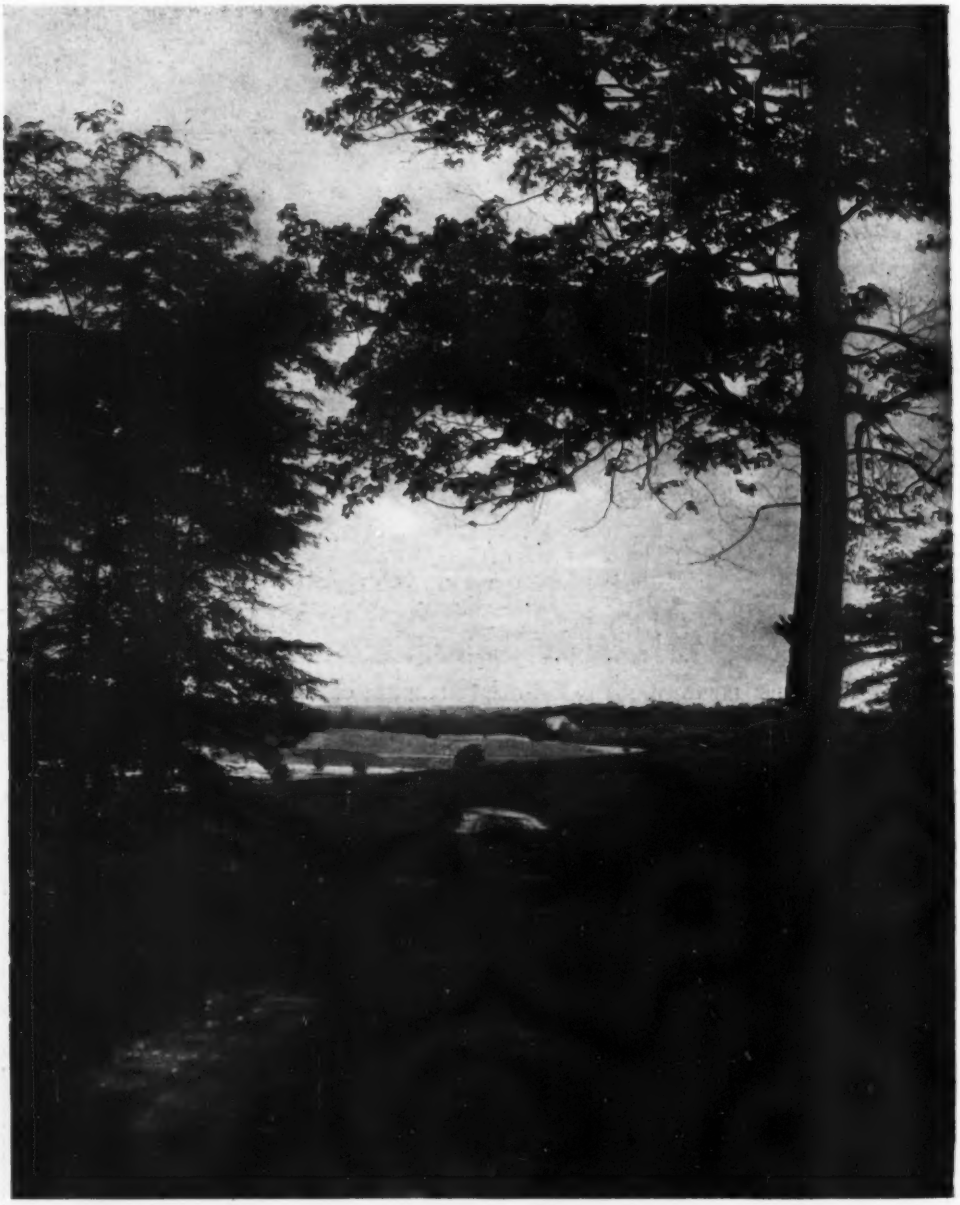
Applying the above percentages to the case of the twelve factories the deductions are as follows: 6,697 additional employes were required for increased production during the year and 13,843 persons would be the number required to make up for the loss of men by sickness, death, resignation and the other causes given above for vacancies that should be expected, making a total of 20,540 employes. Instead of engaging this number it was found necessary to hire 42,571 persons in order to keep the working force up to requirements, that is, over twice as many employes were hired as it should have been necessary to hire.

The principal disadvantages resulting from the necessity of hiring so many more workmen than should be necessary are the lowering of the standards of the work produced, the bad effect upon the workman and his whole family in shifting about from place to place and the needless extra expense in manufacture. The first and second results are so apparent that they need no elaboration; but the third one of extra expense may be understood better by dividing it up into some of the leading items as given by Mr. Alexander.

These are the extra clerical work in the hiring processes, the instruction of new employes by foremen and assistants, the reduced rate of production caused by new workmen, and the increase of the amount of product damaged or spoiled by unfamiliarity with the work.

EMPLOYES' LIBRARY, NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO.

THE NURSES OFFICE FOR EMPLOYES, NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO.



SCENE AT HILLS AND DALES PARK. THE COUNTRY CLUB FOR EMPLOYES OF THE NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO.

FIELD DAY SPORTS AT HILLS AND DALES PARK. THE COUNTRY CLUB FOR THE EMPLOYES OF THE NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO.

Very careful inquiry and study was made of the total of extra expense at the various plants incurred by the above causes, and the final calculation of the total loss of the twelve factories due to the turnover of labor was placed at $831,000 for this one year. This is $69,250 for each one if divided up equally; but the factories varied in size and number of employes, so that the amount of loss for some of them would be greatly in excess of the average amount.

Dr. Joseph H. Willits, of the University of Pennsylvania, Instructor in Industry, says in the Annals of the American Academy of Political and Social Science, concerning the turnover of labor at the present time, that "Speaking broadly, the average concern hires or fires as many people during the year as are on its payroll. This great flow of labor from shop to shop is a serious loss both to employer and employe. Estimates of the cost to the employer of securing, hiring and adjusting the new employe to an organization range from $30 to $500 per individual."

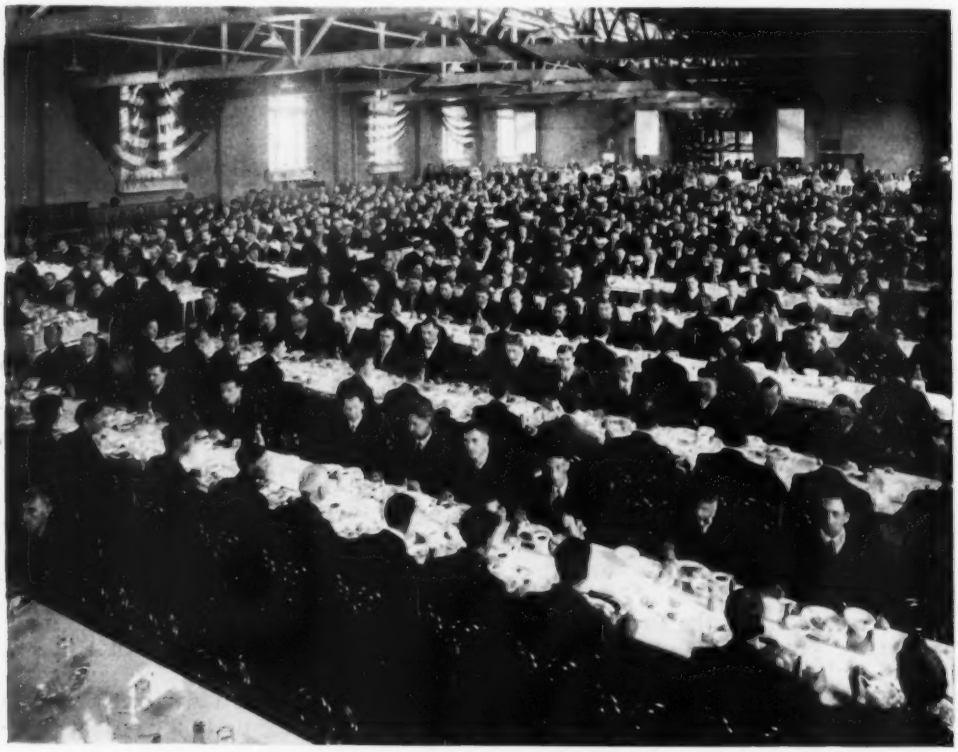
Professor Roy Wilmarth Kelley, of Harvard University, in a discussion of labor turnover, gives the results which the Vocation Bureau of Boston found after investigating the experience of thirty different firms, employing 55,000 persons. This was that the cost of turnover of labor to these firms ranged from $25 to $100 per person. He also states that there is abundant proof to establish the fact that all large plants, unless they are actually diminishing their output and cutting down their force on that account, are now obliged to hire about twice as many employes during the year as are carried on their payrolls in order to keep the working force up to a constant number.

The following statements by Profes-

sor Kelley are also of interest in this connection: "The Federal Industrial Relations Committee reports that, in sixteen occupations of the cloak and suit industry of New York City, the maximum number of employes during any week of the year was only 1,952. The total number on the payrolls, however, was about 4,000.

"Reliable authorities have estimated that every year, in normal times, there are over 3,000,000 able-bodied men out of work for at least three months."

Mr. Boyd Fisher, vice-president of the Detroit Executives' Club, has contributed valuable information on the subject from the reports of the industries of his city. He states that the labor turnover in the last year in 57 Detroit plants has averaged a little over 252 per cent per plant and that plants which contain employment departments had a turnover one-third less than those which did not have such departments. He states that "The employment department of the Packard Motor Car Company of Detroit estimates that the new and inexperienced workmen taken on as a result of labor turnover causes them to make a 25 per cent allowance of equipment for building, direct labor and supervision." He reports that the Saxon Motor Car Company has reduced its labor turnover 142 per cent, and that the Hayes Manufacturing Company has cut its turnover in two. He recognizes that the reduction of the turnover of labor is only the first step in what should be a development of the workmen and the elevation of their standards. In Detroit they are united and in earnest in their effort to reduce the excessive turnover of labor and are preparing to go, as he says, as far as the workmen's home life to solve this problem. He has found that labor turnover breeds inefficiency and inefficiency breeds turnover. He has already reported a long list of remedies which the



EMPLOYES' DINING HALL, NATIONAL CASH REGISTER, DAYTON, OHIO.

THE BOYS' GARDENS ADJOINING THE WORKS OF THE NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO.

concern mentioned intend to apply to correct this serious defect in their industries.

Dr. E. M. Hopkins, president of Dartmouth College, says, "The one greatest problem in American industries at the present time is how to get and how to keep a labor supply who will do the work in hand in the best and most profitable way."

And so we find no end of authorities who are deeply impressed with the great importance of a concerted effort to diminish and bring down to a reasonable standard this excessive fluctuation of labor.

If the result of these experts secured in different localities were applied universally to the workmen of this country, the result secured would be most startling.

Mr. Alexander in his very valuable report found that the cost to replace a workman was from $8.50 to $73.50 per man. The other experts vary in their reports as to the cost per man of labor fluctuation from $25 to $500. Even if we were to take the apparently conservative figure of $50 per man and apply it to the 8,000,000 industrial workers of this country, assuming, according to Dr. Willit's rule, that this number were hired and fired during the year, the total waste in this country thereby would be approximately $400,000,000.

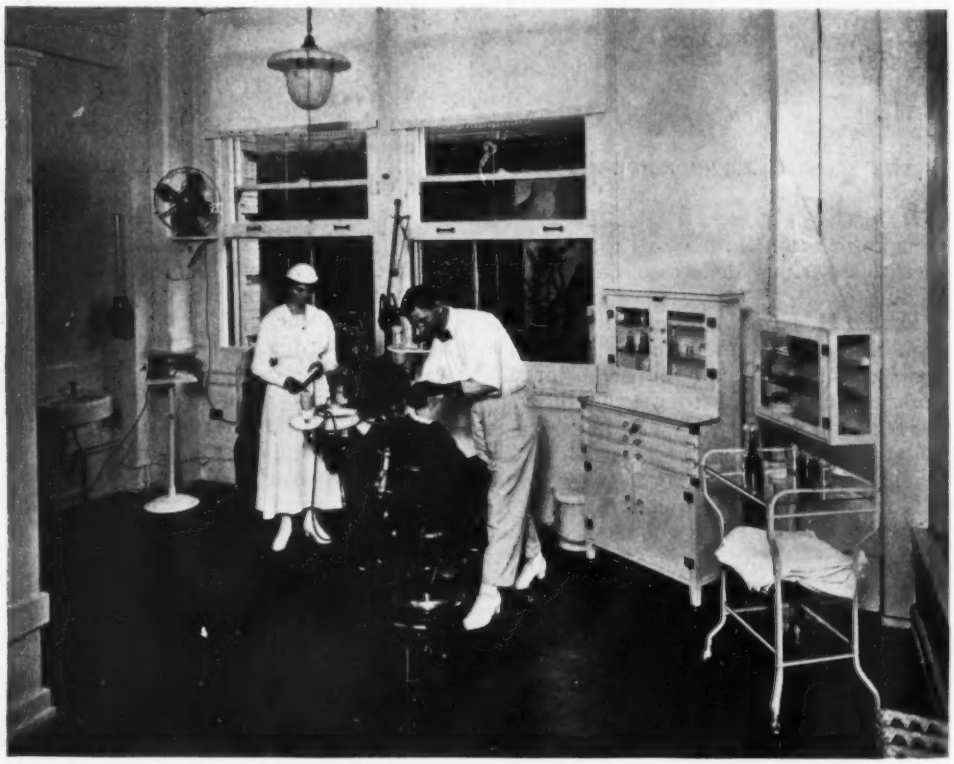
Few people probably realize the tremendous loss and waste that are occurring and might occur from this cause; and it is not alone the money loss to employer which ought to make the strongest appeal for a reform, but the fact that the shifting of workmen about and the idle periods ensuing lower the social standard, using up the savings of work-

men, throwing them into debt, causing their families to be broken up and sometimes resulting in sickness, disease, famine and crime.

The remedy for excessive labor turnover is unique compared with other industrial troubles, because it is something that cannot be accomplished by the enforcement of any set rules, as the employes always have the right to quit their jobs. Neither can the conditions which insure permanency of employment be secured by money alone. Adequate wages for a decent living with a reasonable surplus for old age are, of course, essential in every case; but the employe can usually secure the same wages at any one of the various plants engaged in the same business, and the greatest factor, therefore, in holding him permanently in his position is not his pay, but any one or several of the other conditions that surround his job. The remedy, therefore, for labor fluctuation must, on account of the nature of the proposition, be something which will appeal to the workman and which he will voluntarily accept.

Practically, then, the problem reduces itself to discovering what will attract him, what will satisfy him and make him contented, not only with his work, but with his lot in life. The situation, when applied to the unskilled laborer, reminds one of the man who plays the bass drum in the band. He has the heaviest load to carry, and the least interesting instrument to play; but if he enjoys the music he will march along with the rest of them quite contentedly and happily, doing his part.

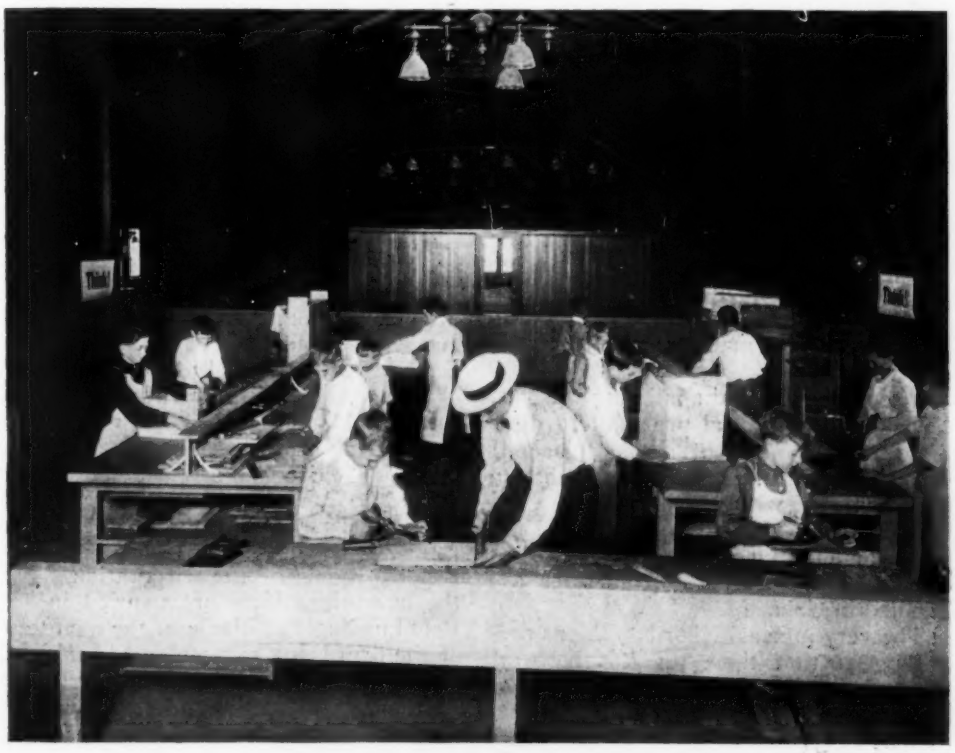
But, with the whole body of workmen, there is a feeling abroad that, prior to the war, they did not, as a rule, get their just share of the returns of their labor. Many feel that conditions were often



DENTAL DEPARTMENT FOR EMPLOYES, NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO.

unnecessarily hard and severe, and now, since they were largely the means of winning the war and saving the world from ruination, they intend to see to it that they get some of the rewards in better working conditions.

So labor now has a bigger voice and a stronger control of affairs than it ever had before. But the heads of industry do not plan to fight with labor. On the contrary, all that has been mapped out on the program of procedure has been of a peaceful nature; and if the measures planned and being discussed are carried into effect, they ought to put the American workman in a position better in every respect than he has ever enjoyed before.



THE BOYS OF THE NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO, BEING INSTRUCTED TO MAKE FURNITURE OUT OF BOXES.

The OFFICE BUILDING *of* GASTON, WILLIAMS & WIGMORE, INC. ON LOWER BROADWAY, NEW YORK CITY

ALFRED C. BOSSOM, ARCHITECT

WHEN the war started Messrs. Gaston, Williams & Wigmore foresaw demands that the war was bound to create. They jumped in, in a typically American fashion, and grasped the situation with both hands, with the result that in less than five years from the date of organization, this firm has created a business that needed its own permanent and individual home on lower Broadway.

With the same enterprising spirit that this corporation displayed in building up a great activity, it decided its home should be the first building on Broadway with a façade of man-manufactured cast material.

The material for the building was cast in blocks by a special process and these were roughly finished at the place of manufacture in a manner very similar to that employed with granite. These were then taken to the site, erected, and the entire building was retooled and finished on the spot, just as the buildings are handled in Cuba.

The very unusual labor conditions prevailing at that time, due to the war, caused this, for the building would not normally have been handled in that way. It has, nevertheless, given to the structure an appearance that it is safe to state causes fully ninety per cent of the passersby to imagine it to be a granite building, although no effort was made to imitate granite. The material being intended to be exactly what it is—a cast concrete hand-worked, man-made product.

The general style of architecture is a free treatment of the Roman Classic and was adopted so as both to give the monumental appearance produced by great columns and yet to allow every available inch of light possible. The windows run to the ceiling and down to the floor. As the site was so deep and the land so valuable, it was not desired to give up any more space than absolutely necessary for courts or internal natural lighting and ventilation.

The building extends through from Broadway to Trinity Place and occupies a site approximately 90 x 190. It has a central court and two longitudinal walls which divide it up into practically three separate buildings.

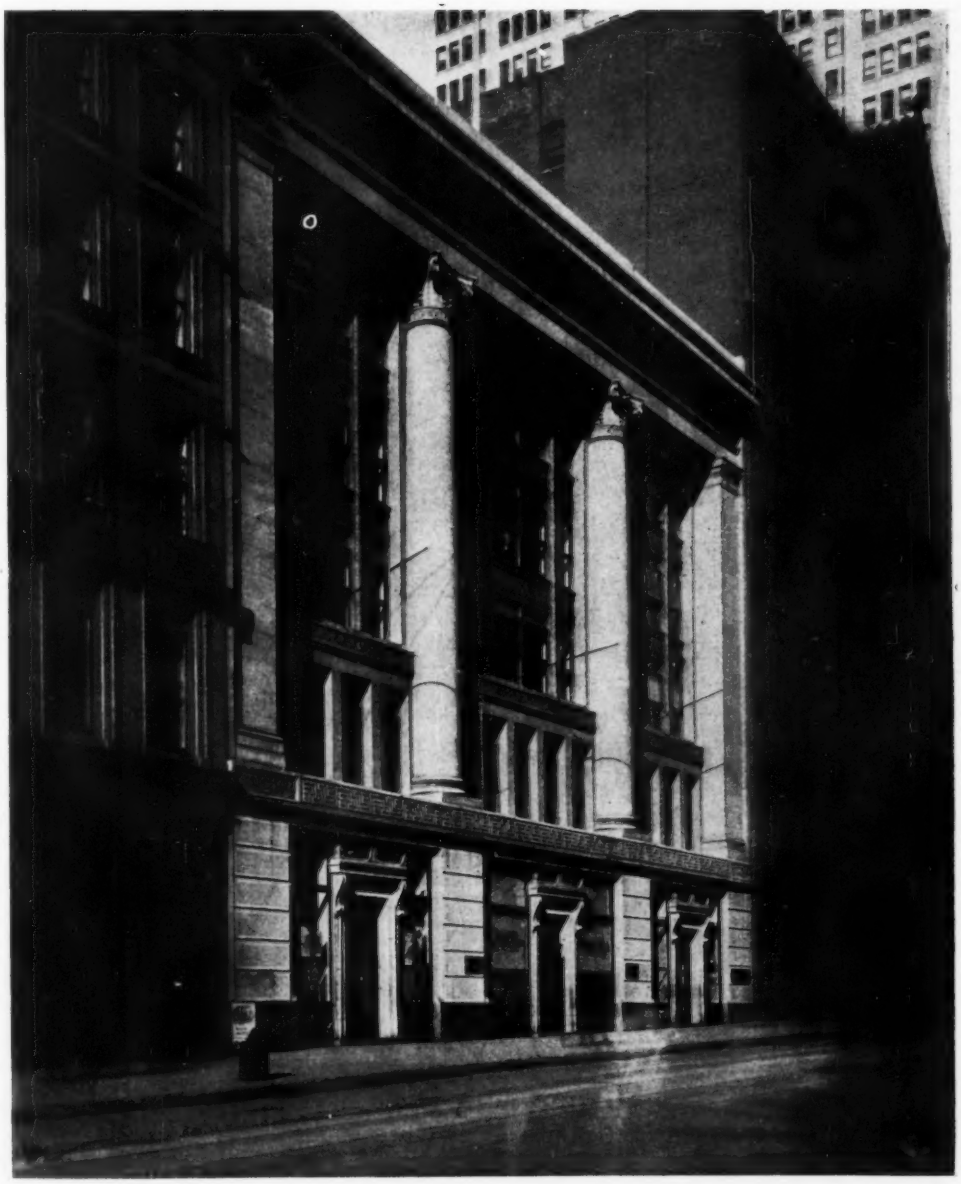
The ground floor is occupied by the entrance vestibule, etc., the Globe Steamship Company, one of the subsidiaries of Messrs. Gaston, Williams & Wigmore, Inc., the Philippine Bank and Hedsia Banking Co.

Access to the main executive offices on the second floor is gained by a very handsome monumental marble staircase eight feet wide, leading to a public hall on the second floor, from which open reception rooms and waiting rooms, that are surrounded by the private offices and directors' rooms of the corporation. All the executive offices are paneled in selected mahogany. Some of the members of the firm being experts on the subject, they insisted that their offices should be specimens of the finest cabinetmakers' handicraft.

Each of the other departments of the organization has been allowed quarters complete in itself and divided from all others by fire walls and fireproof doors.

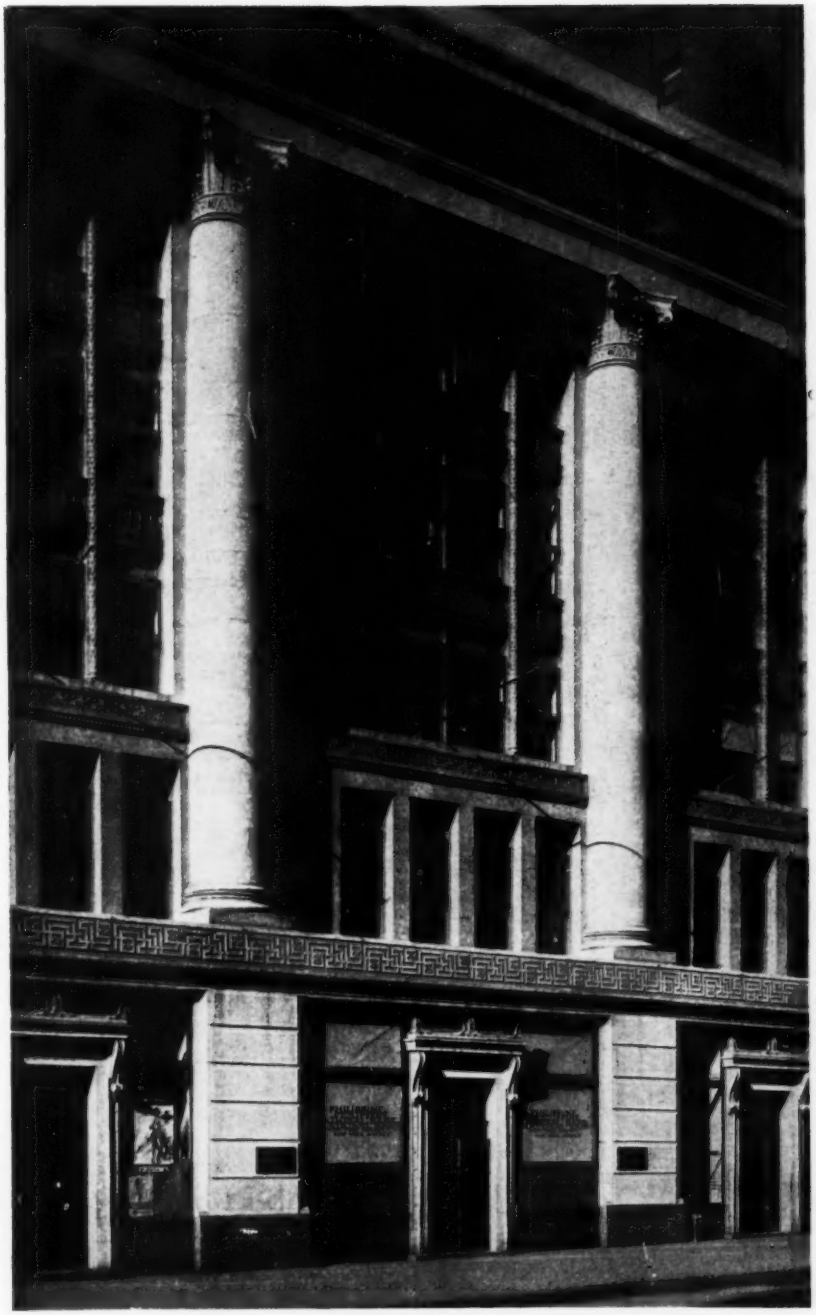
Rest rooms and all other accommodations have been provided for both sexes throughout the building. The two passenger and one freight elevator provide service from all floors. The basement is given up to the equipment and the handling of a large tobacco activity in which the corporation is engaged.

The use of concrete for other than manufacturing plants has so far not been



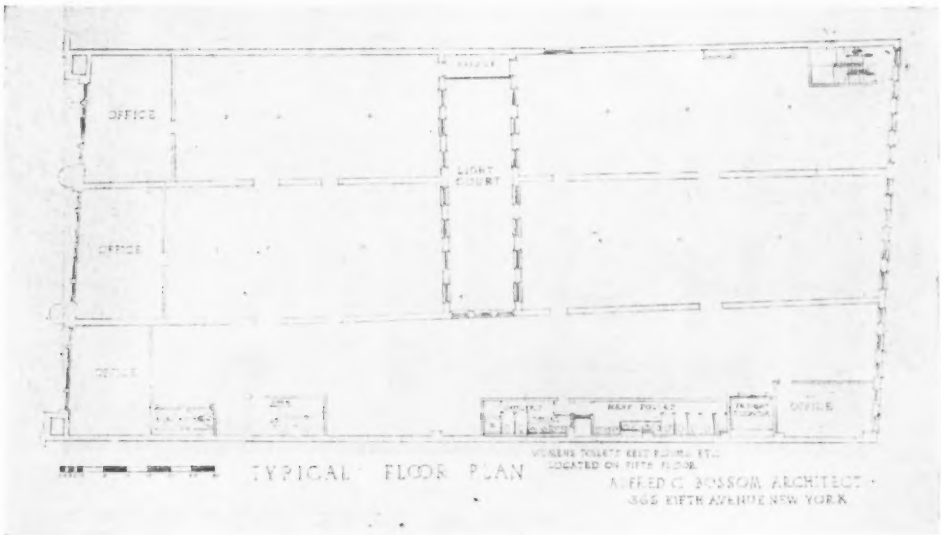
GENERAL VIEW OF FAÇADE, LOOKING UP BROADWAY, GASTON, WILLIAMS & WIGMORE, INC., BUILDING. ALFRED C. BOSSOM, ARCHITECT.

GASTON, WILLIAMS & WIGMORE, INC., BUILDING ON LOWER BROADWAY, NEW YORK CITY. ALFRED C. BOSSOM, ARCHITECT.



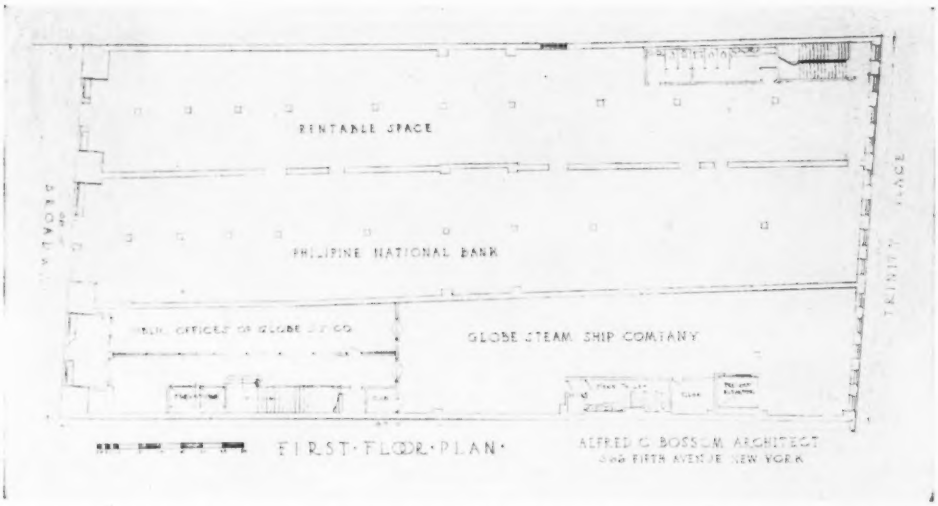
DETAIL OF CENTRAL BAY OF BROADWAY ELEVATION, GASTON, WILLIAMS & WIGMORE, INC., BUILDING. ALFRED C. BOSSOM, ARCHITECT.

VICE-PRESIDENT AND GENERAL MANAGER'S OFFICE—GASTON, WILLIAMS & WIGMORE, INC., BUILDING.
Alfred C. Bossom, Architect.



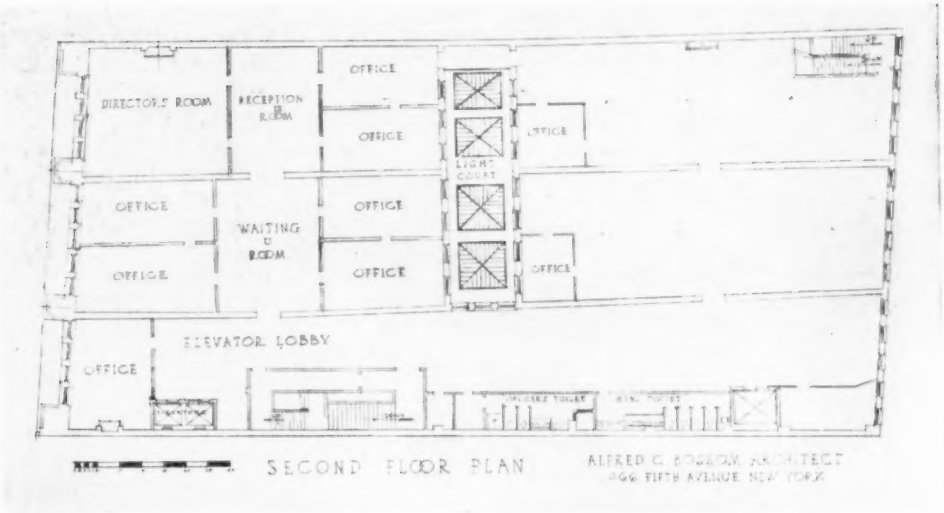
GASTON, WILLIAMS & WIGMORE, INC., BUILDING ON LOWER BROADWAY, NEW YORK CITY.

RECEPTION ROOM TO DIRECTORS' ROOM—SECOND FLOOR, GASTON, WILLIAMS & WIGMORE, INC., BUILDING.
Alfred C. Bossom, Architect.

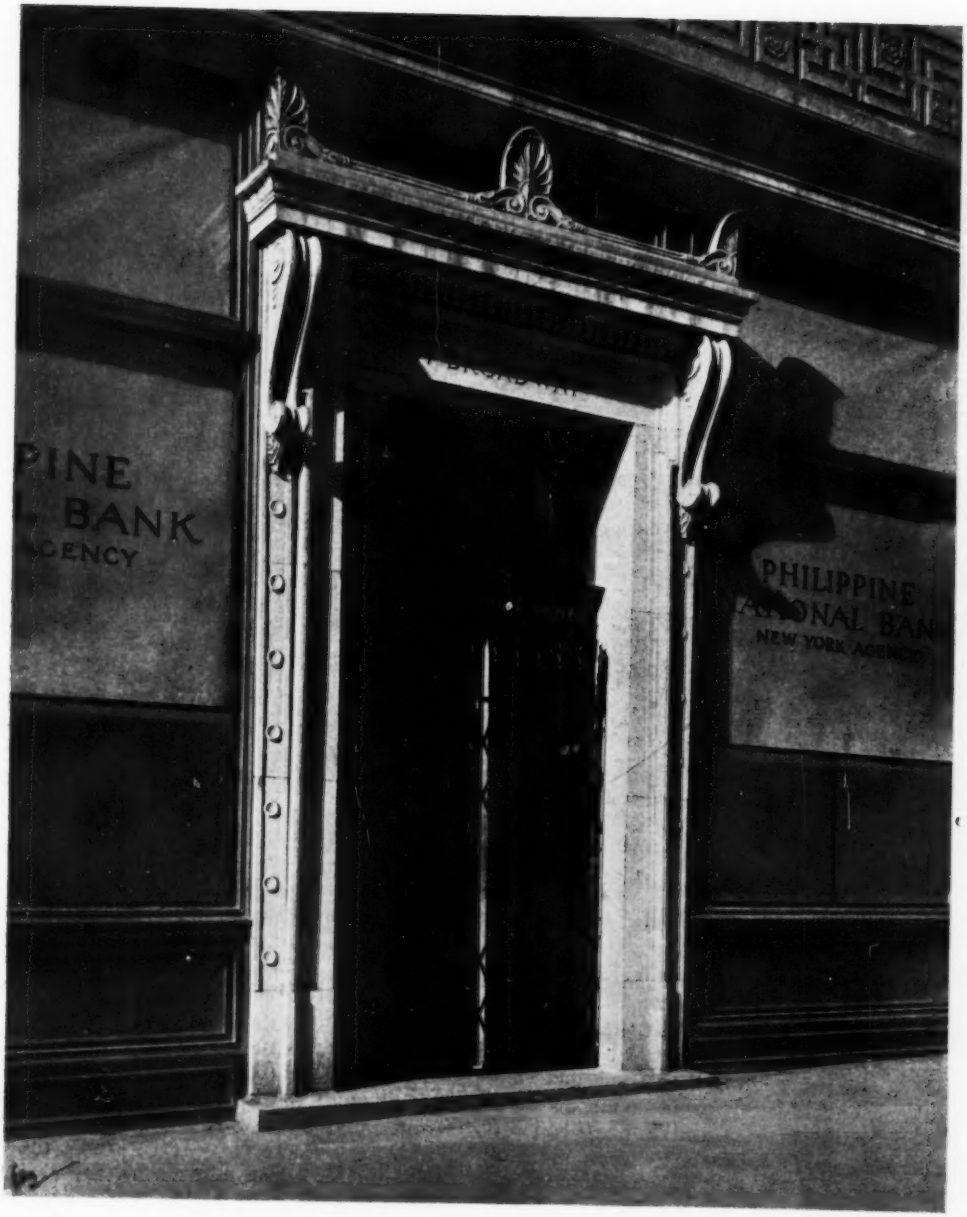


GASTON, WILLIAMS & WIGMORE, INC., BUILDING ON LOWER BROADWAY, NEW YORK CITY.

DIRECTORS' ROOM—GASTON, WILLIAMS & WIGMORE, INC., BUILDING.
Alfred C. Bossom, Architect.



GASTON, WILLIAMS & WIGMORE, INC., BUILDING ON LOWER BROADWAY, NEW YORK CITY.



GASTON, WILLIAMS & WIGMORE, INC., BUILDING. ALFRED C. BOSSOM, ARCHITECT.

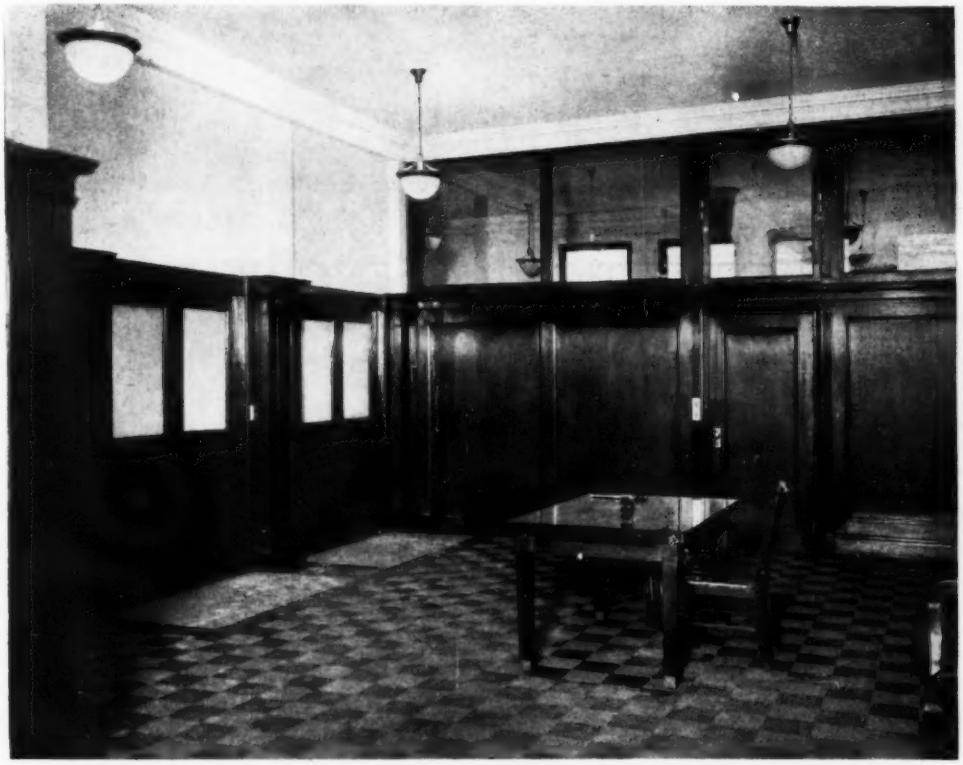
ENTRANCE HALL, GROUND FLOOR—GASTON, WILLIAMS & WIGMORE, INC., BUILDING.
Alfred C. Bossom, Architect.

very extensive; in fact, it is safe to state that it is only in its infancy. In former times there were a few concrete buildings built in Europe. Twenty years ago the engineers of France actively tried to introduce this material. They sent speakers to England, who lectured before the Royal Institute of British Architects and others, but their efforts were not crowned with much success, and it has been left to America to take the lead in creating examples such as this corporation's building provides, and will without doubt tend to a much wider use in the very near future.

There is one underlying principle about construction that is often lost sight of. The coefficient of expansion of practically every material used in building varies and the result is that as the temperature changes throughout the year, so there is this continuous movement among all the different constituent parts of every construction. This leads at once to deterioration.

In reinforced concrete the coefficient of expansion is practically the same between the metal and the cement and stone, which puts it instantly at an advantage for durability over brick and a steel frame building for instance. It has its handicaps, of course. If the material is cast and left from the mold, the water naturally gravitates to the outer surface and forms a very thin crust of different specific gravity, which consequently is sure to craze, and in a very short time get unsightly; but by removing this exterior surface or crust, so that the exposed surface is of the same density as the body of the material, this disadvantage should be eliminated and leave a sur-

face sufficiently dense and waterproof, provided the correct ingredients have been employed in the manufacture of the material, that this concrete surface should withstand the action of the elements equally well, if not better, than the hardest material we use for exposed surfaces. That is—the granite.



ELEVATOR LOBBY, SECOND FLOOR—GASTON, WILLIAMS & WIGMORE, INC., BUILDING.
Alfred C. Bossom, Architect.

THE ESTHETICS OF ENGINEERING

Bibliographical Notes

By F. WEITENKAMF

The question, the problem, implied by the above title is with us, very much with us. The history of our skyscrapers, a history of slowly awakening realization of the necessity of adapting design to changed conditions of construction, shows that; or the erection of bridges with meaningless decoration of a "gingerbread," or rather wedding-cake-ornament, type. With the necessity of giving, in the design of a structure, outward expression of the inner construction, the importance of absolute harmony and understanding between architect and engineer is evident. Without any thought of reverting to conditions of the Italian Renaissance, and finding architect and engineer in one person (say Leonardo da Vinci or Michael Angelo), one may insist on discriminating co-operation between the two professions.

In view of the present-day widespread *cacoethes scribendi,* the printed matter relating to the present subject—at least as far as I have been able to unearth it—seems not too extensive. However, the following list, partly the result of personal examination of items, partly taken from sources such as the "Engineering Index" and the *Industrial Arts Index,* seems suggestive. I offer it in the hope that readers of The Architectural Record may add to it, and that it may perhaps stimulate discussion and thought.

Engineering handbooks, such as DeWitt Clinton's "Engineering for Architects" (1916), or Joseph Kendall Freitag's *Architectural Engineering* (1912), have not been included. The earliest title that I have found which bears a certain relation to the subject is Henry Van Brunt's paper, before the American Institute of Architects, Dec. 7, 1859, on "Cast Iron in Decorative Architecture." It was reprinted in the *Crayon* for 1859.

The list follows:

Hofer, H. J. Artistic Engineering. Engineering News, 1877; pp. 134-137.

Statham, H. Heathcote. The Architectural Element in Engineering Works. Journal of the Royal Institute of British Architects, vol. 6, 3d series; London, 1899; pp. 385-396; Discussion, pp. 396-400.

In many cases "you cannot draw the line very easily between architecture and engineering." But beyond that there is an essential distinction; in one case consideration of architectural expression is important, in the other "consideration of structural fitness and economy of material are paramount." Artists are mournful over unbeautiful structures, but structure is in itself a subject of great interest. "A suspension bridge is so beauti-

ful an object that it is exceedingly difficult to spoil it." The discussion brought out the opinion that engineering should be under the control of the Institute of British Architects or of a Parliamentary Committee, and that "an engineer should seek the co-operation of an architect for his artistic details."

Wright, Frank Lloyd. The Art and Craft of the Machine. Journal of the Western Society of Engineers, vol. 6, 1901; pp. 354-369. Address, with discussion.

"It has too long been a matter of popular belief that the engineer and men of business are to create works and the artist to 'trim them up a bit.' The engineer designs his bridge, . . . turns it over to the architect, who hangs a few swags or garlands over its sides, builds a monument or two on it, without relation to the structure, . . . and during the process there has been neither sympathy nor intelligent co-operation between the engineer . . . and the architect, each feeling the other much in the way. . . . There is beginning here in the Middle West a movement to . . . seek earnestly for a normal regeneration." Author speaks of the "fearful slavery to precedent and tradition," in this "the machine age"; speaks of the tall office building as one representative problem, and notes that "the steel frame has been recognized as a legitimate basis for a sincere clothing of plastic material that idealizes its purpose without structural pretence."

Sewell, John Stephen. The Relation of the Architect and Engineer to the Design and Erection of Government Buildings. From a paper read at the convention of the American Institute of Architects. Engineering News, Dec. 18, 1902.

Bolton, Reginald Pelham. The Engineer, the Architect, and the General Construction Company. Engineering Magazine, August, 1904.

Purdy, Corydon T. The Relation of the Engineer and the Architect. Read at the convention of the American Institute of Architects. Engineering News, Jan. 26, 1905.

Franz, W. [Architectural Treatment of Engineering Structures.] Ingenieur-architekturen. Technik und Wirtschaft, June, 1910.

Parsons, William Barclay. The Architect and the Engineer, an address before the Architectural League, Feb. 8, 1911.

"Between the two branches of the profession there is a great gulf that as yet no engineer has been found capable of bridging, but . . . the difference should be recognized and clearly understood and the way opened by which the two groups can be made, not only to inspire each other, but to produce something greater and better in the way of construction than either group can possibly hope to obtain alone." Author says that "in spite of the common origin of the two professions there is no doubt that we have drifted far apart." Referring to mistaken views on both sides, and to the necessity of facing the combination of the science of construction and the art of construction, he concludes that the architect must "lay aside the rules that governed his predecessors centuries ago, and . . . take up fearlessly the science of the twentieth century."

Lux, Jos. Aug. Ingenieur-Aesthetik. München, 1910.

The chapters in this little book touch on engineering and style, iron as material of construction, the art of construction and the art of the engineer, the art of the engineer and the spoiling of landscape, reinforced concrete and its artistic possibilities, esthetics of machinery and the means of communication. "Artistic form," says the author, "must be newly invented from new elements. That is the problem at which we are all working." He cites Eiffel: "I firmly believe that my Eiffel tower will have its peculiar beauty. . . . The basis of all construction is that the general lines of a building shall completely correspond to its purpose. And what is the fundamental necessity in my tower? Its power of resistance to the wind."

Bernhard, Karl. Der Moderne Industriebau in Technischer und Æsthetischer Beziehung. Zeitschrift des Vereines Deutscher Ingenieure, vol. 56, 1912; pp. 1141, 1185, 1227.

Architect and Builder Not Synonymous. Architecture and Building, vol. 45, April, 1913; pp. 127-128.

Engineering Standards and Architectural Requirements. Engineering Record, vol. 68, Aug., 1913; p. 114.

Caffin, C. H. How to Study Architecture. New York, 1917.

P. 477: "Co-operation of the architect and the engineer . . . is one of the needs of the age. . . . For it is only a narrow view of utility that overlooks the utility of beauty." On p. 339 the author notes that "Renaissance architecture involved no new principles of construction. . . . The architect ceased to be pre-eminently the master-builder. He became a designer . . . on paper." This last fact obviously may well have its bearing on the present question.

Bragdon, Claude. Architecture and Democracy. New York, 1918.

"There is in general all too little understanding and a confusion of ideas and aims. To the average structural engineer the architectural designer is a mere milliner in stone. . . . To the designer, on the other hand, the engineer appears in the light of a subordinate to be used for the promotion of his own ends. As a result of this lack of sympathy and co-ordination, success crowns only those efforts in which, on the one hand, the stylist has been completely subordinated to engineering necessity, as in the case of the East River bridges, . . . or in which the structure is of the old-fashioned masonry sort, and faced with a familiar problem, the architect has found it easy to be frank; as in the case of the Manhattan Storage Warehouse or in the Bryan Park façade of the New York Library. The Woolworth Building is a notable example of the complete co-ordination between the structural framework and its envelope, and falls short of ideal success only in the employment of an archaic and alien ornamental language."

The specialty of bridges has received an extra share of attention, as witness these titles:

Johnson, J. B., Bryan, C. W., and Turneaure, F. E. Theory and Practice of Modern Framed Structures. New York, 1893.

Chap. XXVI, on "The esthetic design of bridges," deals with the influence of material, color, shade and shadows, ornament, etc.

Husband, Joseph. The Esthetic Treatment of Bridge Structures. . . . London, 1901. Reprint, Minutes of Proceedings of Institute of Civil Engineers, v., 145th session, pt. 3.

The Esthetic Characteristics of European Bridges. Editorial, with the first of a series of views of notable bridges, selected by E. M. Wheelwright, who has made a study of his subject. Engineering Record, Feb. 2, 1901.

Esthetics in Bridge Building. Remarks on the work of various nations, suggested by a paper read before the British Inst. of Civil Engineers. Builder, March 15, 1901.

Ornamental Bridges. By H. G. Tyrrell, American Architect, Aug. 24, 1901.

The Architectural Treatment of Bridges. Illustrated extracts from "The Builder," giving suggestions for designing piers and spandrel facings of flat masonry arches. Engineering Record, New York, Nov. 2, 1901.

Some Modern Types of Swiss and German Bridges. Scientific American, Sup., May 23, 1903.

Schmidkunz, Hans. Zur Aesthetik der Verkehrsbauten. Architekt, Wien, Jahrgang 10, 1904; pp. 41-44.

Killam, Charles M. Bridge Design from the Architect's Standpoint. Harvard Engineering Journal, Nov., 1909.

Young, C. R. Esthetics in Bridge Design. With discussion. 13 plates. Canadian Society of Civil Engineers, Transactions, Montreal, 1911; vol. 25; pp. 254-288.

Tyrrell, Henry Grattan. Artistic Bridge Design. Chicago, 1912.

Koester, Frank. Bridges and Bridge Approaches. American City, New York, 1913; vol. 8, pp. 467-472.

Mayer, Max. Die Brücke als Kunstwerk. 10 plates. Die Plastik, München, 1914; pp. 25-28.

Tyrrell, Henry Grattan. The Esthetic Value of Municipal Bridges. Wisconsin Engineer, 1914, vol. 18; pp. 253-259.

Tyrrell, Henry Grattan. A Plea for Beautiful Bridges. Association of Engineering Societies, Journal, St. Louis, 1915, vol. 54; pp. 35-43.

Klaber, John J. Suggestions for the Artistic Treatment of Iron Bridges. American Architect, 1915, vol. 107; pp. 357-360.

Titus, W. J. Artistic Design of Concrete Bridges. In: Hool, W. J. Reinforced Concrete Construction. New York, 1916, vol. 3; pp. 493-527.

Waddell, J. A. L. Bridge Engineering. New York, 1916; vol, 2, chapter 52; pp. 1150-1181: Esthetics in Design.

Waddell, J. A. L. Esthetics of Bridge Design. Railway Review, vol. 62, 1918; pp. 710-714.

Fowler, Charles Evan. Architecture and Construction of Bridges. N. Y. Railroad Club Proceedings, vol. 28, Sept. 20, 1918, pp. 5385-5395. General discussion, pp. 5394-5395.

Evidently, the matter of influence of material is a very important one here, as in any art. (Among a number of books and other writings of this phase of the subject of architecture, one at least—Banister F. Fletcher's "Influence of Material on Architecture" [London, 1897]—has a chapter [ix] on "Modern Architecture: a Mixed Period, the Age of Iron and Steel.")

In any art, the artist must understand the materials and tools with which he works. He must recognize and respect their limits, and appreciate and utilize their possibilities. That's why the sculptor adapts his clay model to the material (granite, marble, bronze) in which the statue is to be reproduced eventually. That's why woods of different degrees of hardness produced changes in wood-carving design in English furniture. Can architecture get away from this universal rule?

These matters of structure and material are basic, of course, as appears sufficiently clearly from even the short summaries above given of some of the writings listed. It is the misapplication of certain ideals in design to structures to which they were not suited that may have helped to retard a better understanding of present-day problems in the proper outer presentation of engineering structures. The architect, it would seem, has already lost the game if he tackles his job as one which implies covering up by a beautiful shell a structure that is ugly. It is only by discovering whatever there is of dignity and beauty in an engineering structure, and insisting on its salient and structural characteristics, that the finest success has been or can be achieved.

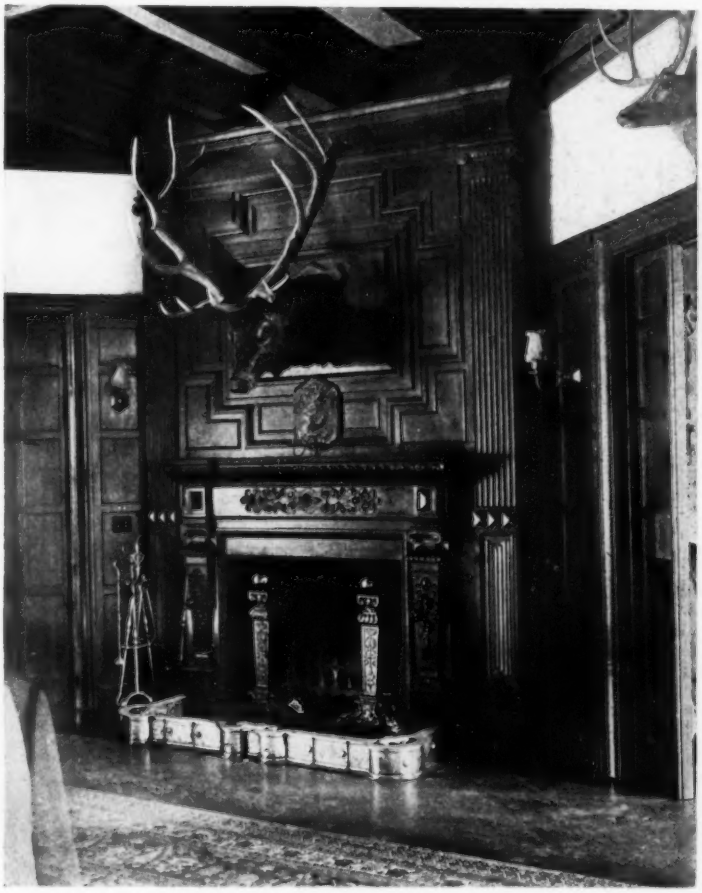
One thinks here of the always pleasing old East River Bridge, New York, in its simple, straightforward presentation of the technical problem before the engineer. Or of the Woolworth Building, also in New York, which finds its success not because of its Gothic character *per se*, but because it accentuates those perpendicular lines of steel-structural strength which most sky-

scraper architects had fearfully tried to suppress by the emphasis of horizontals.

Of course, no depreciation of the value of traditions is intended. One must note with regret the present-day disregard of the work of the past, the disinclination, in the broad field of the applied and decorative arts, to look at anything older than yesterday or this morning, the frequent wild hunt for the new. It is only the forcing of designs, no matter how approvedly classic, in violation of the eternal law of appropriateness, that is to be deprecated.

Art is an expression of the racial and social atmosphere of its time and its surroundings. The expression of taste may change, but not its underlying principles. Is it not, after all, adjustment of means to end and end to means that makes the beauty and impressiveness of the Greek temple, the Gothic cathedral, the Renaissance villa, the Colonial country house? And does not the same rule hold good today?

Changed conditions force readjustment in any line of activity. International political affairs have been, and are, emphatically teaching us that. The extracts from the writings cited above seem to show clearly the need for a full understanding in the question of the architect *and* (not *vs.*) the engineer. Perhaps the publication of this list may help a little in that direction.



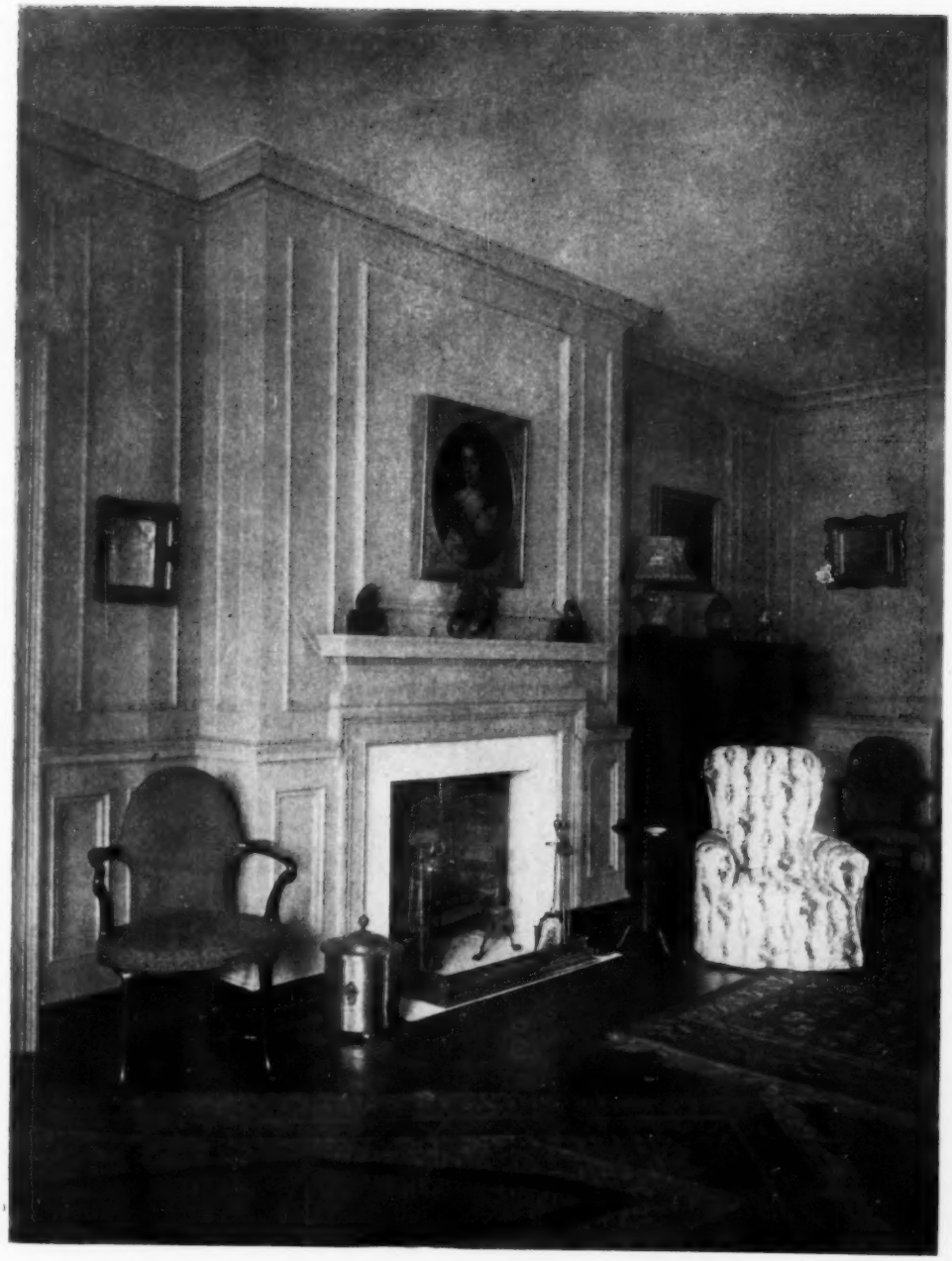
LIBRARY—HOUSE AT RED BANK, NEW JERSEY.
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT.

BOUDOIR—HOUSE AT RED BANK, NEW JERSEY.
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT.

SECOND FLOOR HALLWAY—HOUSE AT RED BANK, N. J. WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT.

LIBRARY—HOUSE AT RED BANK, NEW JERSEY.
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT.

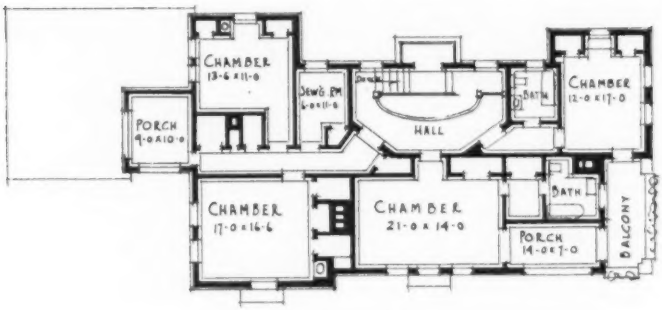
LIVING ROOM—HOUSE AT RED BANK, N. J.
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT.



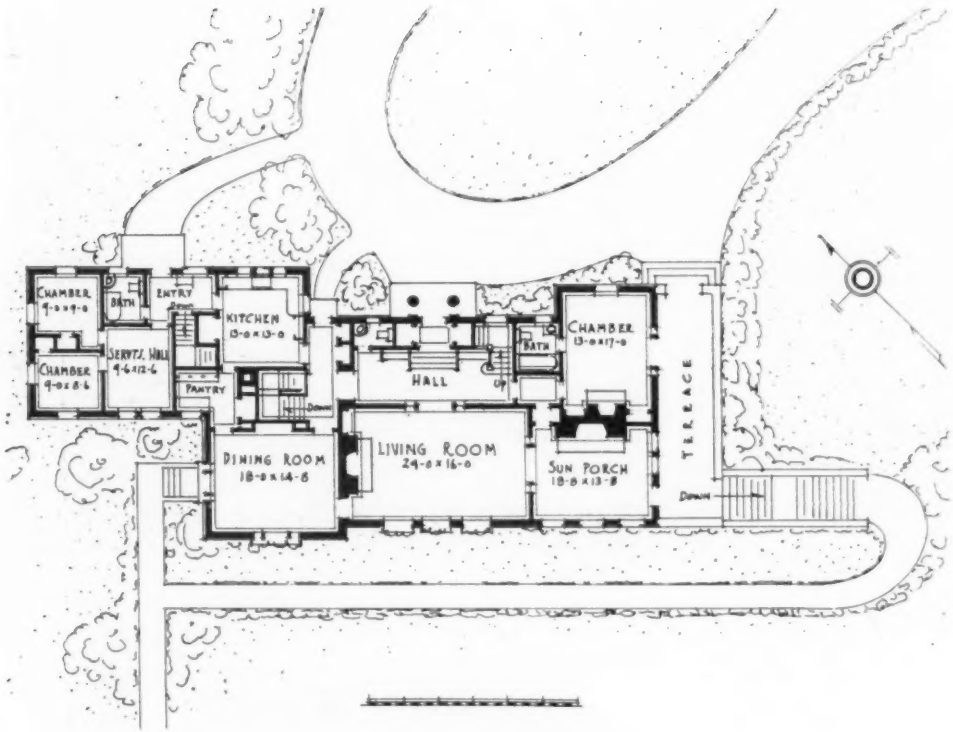
LIVING ROOM—HOUSE AT RED BANK, N. J.
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT.

BEDROOM HOUSE AT RED BANK, NEW JERSEY.
WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT.

RESIDENCE OF JUDGE EARLE C. BRONAUGH, BOARDMAN, OREGON. LAWRENCE & HOLFORD, ARCHITECTS.



SECOND FLOOR PLAN



FIRST AND SECOND FLOOR PLANS—RESIDENCE OF JUDGE EARLE C. BRONAUGH, BOARDMAN, OREGON. LAWRENCE & HOLFORD, ARCHITECTS.

GARAGE—ESTATE OF FREDERIC G. CARNOCHEN, ESQ., NEW CITY, N. Y. RENWICK, ASPINWALL & TUCKER, ARCHITECTS.

NOTES AND COMMENTS

The River of San Antonio.

Few municipalities recognize the possibilities for civic improvement which are to be found in even a small stream of water. Fewer still develop these possibilities when they are recognized.

Occasionally there is a city, however, in which a stream is appreciated and is regarded as something more than part of a drainage system. Among these may be recorded the name of San Antonio, Texas. To be sure the stream which San Antonians dignify as a river would be referred to as a creek or brook in a more humid climate, but streams of any size or variety are not sufficiently common in the great Southwest to be trifled with. Even so, the majority of cities would fail to recognize the desirability even of a little stream writhing erratically through the downtown district and withholding from commercial use many acres of valuable real estate; the average City Council would have built an intercepting sewer, the stream would have disappeared from view and the city would have become as commonplace as any other good hustling enterprising town.

San Antonio saw further and, tiny and lacking in moisture though her river might be, she decided to make the most of it. She neither condemned it to solitary confinement in a brick sewer nor straightened

THE SAN ANTONIO RIVER, SAN ANTONIO, TEXAS.
"Trees form archways above its course."

THE SAN ANTONIO RIVER, SAN ANTONIO, TEXAS.
"Flowers here and there brighten it up."

its course. Instead she wisely let it follow its own sweet way, gave it a wider bed than it demanded, and then made of this bed an attractive little parkway contentedly following the stream's windings and insinuating itself into the most unexpected corners of the downtown district.

Miles of the river still remain undeveloped within the city limits, but in the business center the greatest care has been taken to enhance its attractiveness. No attempt has been made to produce elaborate effects; its banks have been simply grassed over; trees form archways above its course, and flowers here and there brighten it up and add a touch of charm and color, although with but little more of sophistication than nature would employ.

Winding about as it does, it passes under a myriad of bridges, each bridge affording the passerby delightful vistas of fresh, green foliage and quiet waters, a welcome relief from the torrid heat and scorching sun of southern summer days.

I. T. FRARY.

THE SAN ANTONIO RIVER, SAN ANTONIO, TEXAS.
"An attractive little parkway."

THE SAN ANTONIO RIVER, SAN ANTONIO, TEXAS.
"Delightful vistas."

Passing of the Lock Haven Bridge.

It is always with a feeling as of a personal loss that we note the passing of an old landmark. In a recent number of the Record photographs were shown of the old covered wooden bridge at Lock Haven, Pennsylvania, and gratification was expressed that so fine an example of these rapidly disappearing structures had thus far survived the menace of fire, flood and "modern improvement."

It is with regret that we learn that the first of these destroying agencies has at last made of it a victim. During the night of January 27th, fire was discovered eating its way through the old dry timbers and in a few hours the picturesque structure was in ruins.

There is but little doubt as to the in-

cendiary origin of the fire, as it was reported that it apparently started simultaneously in several places and spectators claim to have detected the odor of oil or gasoline.

Inasmuch as the bridge was 800 feet in length, it was impossible to cope with the flames, which soon spanned the river with a most spectacular curtain of fire. Within a few hours nothing was left but the stone piers, and another reminder of the days of heavy timber construction had become but a memory.

I. T. FRARY.

Picturesque Towns of the Border Land.

For the architect with an appreciation of the picturesque and a fondness for the use of pencil and camera, there is available a rich and almost unknown field in our great Southwest. The old Missions of California are of course well known, as are those of San Antonio though in a less degree; but the little towns and villages along the Mexican border, apparently sleeping under the spell of ancient Spain, are practically forgotten. Yet here are to be found quaint old stone houses and churches, picturesque streets and bits of architectural detail that transport one in imagination to the Old World and make it difficult to realize that one is actually within the confines of his own land.

These border towns trace their history back in many instances to the days of the early Spanish settlements, and the inhabitants today are almost exclusively of Mexican origin, speak the language of Mexico, and to a large extent preserve its customs and traditions. So isolated are they that they have scarcely felt the throb of modern life, and one who can appreciate and enjoy the charm of their simplicity will be well repaid for the effort involved in seeking this out-of-the-way land.

SAN YGNACIO, TEXAS.
"Beautiful window grilles or rejas."

SAN YGNACIO, TEXAS.
"Quaint old stone houses."

SAN YGNACIO, TEXAS.
"Writhing posts to support the roof of his *porte-cochère*."

These towns are in many cases remote from railroads and can be reached only by lonely roads of dubious quality which lead through limitless wastes of mesquite, chaparral and cactus. Desolate as the country is and apparently uninhabited, save for an occasional deer, coyote, or rat-

SAN YGNACIO, TEXAS.
"Picturesque streets."

tlesnake, there will be found at infrequent intervals quaint villages, poverty stricken and lonely, yet possessing a charm that is emphasized by the unexpected bits of picturesque architecture and interesting detail that betray the Spanish origin of the early settlers.

The houses are built mostly of stone, plastered over and whitewashed, and against their white walls are contrasted the painted doors and window casings, which are invariably a bright blue in color, this being a hue which is apparently most acceptable to the Mexican sense of beauty.

The houses are as a whole, like those of Southern European villages, bare and plain, except for an occasional touch of ornament about the doors and windows, and with here and there an example whose walls are enriched with ornamental stucco, or upon which the Spanish love of wrought iron work is evidenced in beautiful window grilles.

These grilles or rejas, which are common on Spanish houses, serve as trysting places where the young men may woo the señoritas, it being a custom that the young people can converse with each other before marriage only through the grated windows. The grille illustrated here was found in the little village of San Ygnacio, a town of but a few hundred inhabitants located

SAN YGNACIO, TEXAS.
The old fort.

SAN YGNACIO, TEXAS.
"Wattled walls and thatched roofs."

SAN YGNACIO, TEXAS.
"A brave showing in paneling."

fifty miles from a railroad on the bank of the Rio Grande. The photograph was taken just before Christmas, and an old barn lantern can be seen hanging behind the grille, it being customary to keep a light burning in front of the house at Christmas time in commemoration of the Star of Bethlehem.

Examples of these wrought iron grilles are to be seen in another house in this same little village, and on this house, which is the most ornate in town, the walls make a brave showing of paneling executed in stucco laid over the rough stonework. It is most surprising to find such excellent examples of wrought iron work in these remote communities, and the first thought naturally would be that they were brought from Spain by some of the early settlers, but inquiry elicited the information that these particular specimens were hammered out upon the anvil in the local blacksmith shop.

The old Fort of San Ygnacio is now used as a private dwelling, but the loop holes are still to be seen in the walls and the row of gargoyles which carry the infrequent rains from its roof give to its exterior an interesting touch.

The houses of stone and stucco belong to the well-to-do. Those whose means are unequal to the demands of these enduring materials content themselves with wattled walls and thatched roofs, many of which, as the illustrations show, are most interesting in effect. Just why the builder of the double house, which is shown here, chose the extraordinary writhing posts to support the roof of his "porte-cochère" is beyond one's ken, though the guess might be hazarded that he was an admirer of the twisted columns of the Italian and Spanish Renaissance.

A wealth of romance lingers about these little forgotten towns and the occasional artist or author who penetrates this border land is well repaid for the trouble and discomfort involved in searching it out.

There is little enough of the old time, old world atmosphere left in our country and when found it is usually accompanied by the modern addition of bill boards, pop corn, peanuts and guides. Here, however, one can detach himself from the stress of today and in the vastness of the mesquite plains and the quiet of the sleepy towns can enjoy undisturbed the simple charm that the early Spanish padres bequeathed to the land which they undertook to civilize two centuries and more ago.

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